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# THE MIND





# THE MIND

BY VARIOUS AUTHORS

A SERIES OF LECTURES DELIVERED IN KING'S COLLEGE,  
LONDON, DURING THE LENT TERM, 1927

EDITED BY

R. J. S. McDOWALL

D.Sc., M.B., F.R.C.P. (Ed.)

WITH AN INTRODUCTION BY

ERNEST BARKER, M.A., D.LITT., LL.D.

PRINCIPAL OF KING'S COLLEGE

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## PREFACE

THE object of this series of lectures has been to give to the public in a concise form a general idea of the mind as viewed from several academic standpoints. The reader will probably fail to find any common view, nor in the present state of the subject does this seem possible.

The chief value of the book will probably be to give the reader an idea of the complexity of the subject, and it may at least be said that in this sphere, more than most others, there is a danger of thinking that one has reached a definity of conclusion when one has omitted to consider the problem from all sides.

Each lecturer has been under considerable disadvantage in that he has had to compress his views into a very small space, and at the same time has had to attempt to present in some instances a highly specialized subject to general audiences. Otherwise he has had an entirely free hand in putting forward and developing his views.

R. J. S. McDOWALL.

KING'S COLLEGE,  
3rd June 1927.



## INTRODUCTION

It is a common observation that men's minds are "subdued to what they work in," and that their ideas, assumptions, and outlook on life may all be coloured by the material they handle, and the temper they insensibly form, in the course of their daily work. The lawyer differs from the doctor, and both differ from the scholar; the miner differs from the textile worker, and both, again, differ from the clerk. They approach the world from different angles: they look at its problems in different lights. Not only may profession be unlike profession: within the same profession there may also be deep dissimilarities, which spring from differences in the matter treated and the method of treatment. All scholars are equally vowed to the pursuit of truth, by dispassionate inquiry, for its own intrinsic value. But the student of æsthetics handles one matter by one method: the student of physics another by another: the physiologist differs from the psychologist, and the philosopher may differ from both. Each lives, as it were, in his own house: each looks at reality through his own windows; and even on matters which are common to all, each type of student will make assumptions which he may not



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realize, but which influence none the less the general mode of his thought.

It is the common object of the different writers of this book to elucidate the various assumptions which students of different subjects make with regard to the nature of mind. There is no consistency between the points of view successively presented; and, indeed, the book would defeat its purpose if each writer agreed with the rest in his mode of thought and his conception of his subject. It might perhaps be expected that the first five chapters—belonging as they do to that field of inquiry in which the methods of natural science are used—would show common features which would differentiate them all from the succeeding chapters, which are concerned, in various forms, with the study of the humanities. But this is hardly the case. The biologist, for example, is not in agreement with the physiologist. The one, trained in the study of evolution, sees mind as a growth, continuous indeed from its humble beginnings, but rising to heights of independence and sovereignty—"in the beginning one among a number of properties of the stuff of reality, something which just happened to be: later, a tool in the struggle of life: later still, not merely a tool of life, but her most important tool; and finally, an activity for its own sake, with its own ends. . . ." The other, versed in the intricacies of the physical brain and the mechanism

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of the nervous system, would "bring our mind and ideas into direct relation to material things," giving the name of thought to the complicated response of man's nervous system, and allowing, with a smile of pity, the use of the term "mind" to indicate "the function of his brain." The student of one branch of natural science will thus part company with the student of another; and we may equally expect to find a variety of views among the students of different branches of the humanities. The philosopher may agree with the sociologist, but the anthropologist may disagree with both; and even if education be an art, the student of educational theory may make different assumptions about the nature of mind from those which are made by the student of æsthetics.

There is pleasure, and there is profit, in entering one another's houses, and in looking through our neighbours' windows, with their different views, towards the same hills and the same horizon. A scholar contracts so insensibly the temper, and enters so unconsciously into the outlook, of his own peculiar subject and method, that he is at once surprised and gratified when he is brought to see that he is not as others who are working in different fields, and that they in their turn are not as he. But the writers of this volume are perhaps entitled to hope that its pleasure and profit will not be confined to the republic of scholarship, and <sup>enjoyed</sup> ~~the~~ call such

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general commonwealth of readers will gain by learning to see the different aspects which the mind presents to students of different subjects. The impatient reader, indeed, may exclaim, "What is truth?" and may make the disagreement of scholars a reason for refusing to stay for an answer. But the more reflective reader will form his own conclusions, and gather for himself a harvest of value from what he has gleaned. He will come to allow a discount for the necessary bias implicit in every branch of study; and he may be led to recognize that absolute truth is not a monopoly of any branch. There are fashions in intellectual matters, just as there are in dress. Sometimes physics may be in vogue, and the theory of relativity may seem to be the key of the universe. Sometimes the study of psychology, or of some hyphenated form of psychology, may sweep the field, and the door of the psychologist may be anxiously watched by a crowd of inquirers seeking an easy way to the truth. But perhaps there is no way which can claim for itself the sign-post, *Per me si va nella verità*. At any rate, the traveller may find here descriptions of different ways and the different views which they give; and if he learns no other lesson, he may learn that much travelling has to be done before any man can attain to that "thinking things together" which is true philosophy.

The scheme of the course of lectures on which

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this book is based was suggested by Professor McDowall. He secured the co-operation of many of his colleagues in King's College—Dr. Matthews, Professor Dover Wilson, Professor Huxley, Dr. Aveling and Dr. Hadfield. The college has been additionally fortunate in enlisting the aid of two of the Professors of the London School of Economics—Professor Seligmann and Professor Hobhouse; and two Oxford scholars, Professor Lindemann and Mr. R. C. Collingwood, were also generous in giving. This volume accordingly, if it took its rise in King's College, has been augmented in its course by the contributions of another College and another University; and it is thus a symposium of teachers in different institutions, as well as of teachers of different branches of knowledge.

ERNEST BARKER.

KING'S COLLEGE,  
*30th May 1927.*



# BIOLOGY

By JULIAN S. HUXLEY, M.A., Professor of Zoology,  
King's College, University of London.

It is impossible in the present state of knowledge to arrive at a rigorous proof for any theory of the relation of mind to matter. But it is easy to frame a working hypothesis, and one which has a reasonable degree of probability. I have always felt as a biologist that the view dictated by the principle of economy of Hypothesis was that matter and mind are two aspects of a single reality. Physiology shows us mind so intimately linked with brain that independence with the material substrate of nervous tissue is only thrown the accompanying mental process through channels, or even abolishes it altogether. Everyday experience, however, and the analysis of psychology, is emphatic in seeing in consciousness the most fundamentally real thing possible. In finding mental processes an invariable necessary accompaniment of certain types of those the highest. On the other hand, modern psychology has made what conscious processes grade into insensituous ones. The phrase "the unconscious" is in a sense a misnomer.

The data of experience are dealt  
in the same fashion as they are dealt with by conscious  
processes, in which problems are solved and issue in  
the same type of results, but with the one difference  
that we are not conscious of the operation. Further-  
more, such processes seem to be near what may be  
called the threshold of consciousness. The result of  
the subconscious solution of a problem may thrust  
itself up into consciousness; or the same type of  
process may at one time be conscious, at another  
subconscious.

The study of development further reveals a  
gradual regression of types of behaviour as we go  
back from the adult phase. A child of three is  
obviously conscious in much the same way as our-  
selves: so is a child of two, or even one. But  
what about a child of one month, or a child at birth,  
or an embryo in the womb? There is continuity  
of development from the ovum to the man: but  
no-one can maintain that the ovum can be conscious  
in the same way that the man is conscious. The  
dilemma can best be surmounted if we assume that  
all vital activities of the organism are accompan-  
ied by something of the same essential nature as mind-  
processes, but not necessarily of the intensity needed  
to give what we call full consciousness. In  
the case of subconscious processes in adult life  
this is to be caused by their failing to compete  
with conscious processes which are in  
the system, or failing to enter  
into relations with the domin-  
ant of this latter

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position for most or all of the time : but that they have been leading an independent existence and that this is similar in essence to a conscious existence is shown by the occasional cases of dual personality in which these repressed tendencies, long buried, become split off and reappear at the conscious surface with thoughts and will and emotions and memories of their own.

In the case of early stages of development, on the other hand, it may well be that the conscious-like accompaniment is so feeble and, still more, so fleeting, that consciousness in our sense is impossible. It would be impossible for us to be conscious in the way in which we experience consciousness if our brains did not permit of transitory experiences being linked on to some general stream.

The evolutionary biologist finds the same line of reasoning necessary to explain the development of mind in the race. We possess consciousness : it seems obvious enough that apes have consciousness, and dogs, and mice, and birds. But what sort of consciousness has a frog ? A frog, however, has a well-developed brain. What about the consciousness of a crayfish or an earthworm, in which the brain is rudimentary ? Or *Amphioxus*, in which there is nothing worthy of the name of brain at all ? Or a jellyfish, in which there is no central nervous system ? Or a sponge, in which there is no nervous system of any description ? The bill cannot be met except by the assumption that consciousness has evolved from more primitive properties of life which belong to the mental category. If I had not enjoyed the benefits of a classical education, I should call such



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processes mentoid. But there are some things, like shooting a fox, which one cannot bring oneself to do! I must leave it to some scholar to coin the needed word in a form which shall not be impossible and yet shall be convenient—or else to some barbarian to ride roughshod over the decencies of language. Meanwhile, the term *mind-like* must serve.

Evolution, however, takes us one step beyond development. There is no escape from the conclusion that, since this planet was once in a condition in which living matter could not have existed upon it, *ergo* life must have evolved from non-living matter. The material elements of which living matter is chemically composed are all familiar in the organic world. The energy-transformations of life and the laws controlling them are no different from those of lifeless matter. Are we to suppose that the mind-like properties of life form the one exception to our principle of continuity? I believe not. I agree with G. H. Parker that had some accident permitted us to make the fundamental biological discoveries of the later nineteenth century before the fundamental discoveries of physico-chemical science, the term *matter* would have had a different connotation, for it would have connoted mental properties in addition to those of the matter of present-day physicists. The physicist and the chemist up till now have not found it necessary to postulate these mind-like properties, because no method is yet known for the direct detection of mental activity. Our reasoning as to the presence of mind, save in the one exception of our own personal experience, is always indirect. But biology, though indirectly,

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forces us to extend the spheres of mind into all life and down into not life as well. It thus comes about that we have no word to denote this fundamental matter-*cum*-mind world-stuff—another opportunity for the coiner of technical terms!

I am happy to say that on reading Professor Whitehead's *Science and the Modern World* I found that although the physicist *qua* physicist need not assume mind in lifeless matter, yet he is driven to do so if, like Whitehead, he is not only a physicist, but also a great philosopher. For Whitehead, reality is a series of *events*. The mind-matter relationship is dealt with by him in two sentences of immortal pithiness (page 209): "We can now see the relation of psychology to physiology and to physics. The private psychological field is merely the event considered from its own standpoint." In other words, the processes of conduction, excitation, inhibition, and passage of synapses which the physiologist finds occurring in the brain when a man thinks or feels, and which he rightly hopes and expects to analyse in physico-chemical terms, these same processes are, to the brain in which they occur, experienced as consciousness. The material and the mental are inseparable.

I know of no other hypothesis which not only satisfies the biological and physiological facts, but yet does not unnecessarily go beyond them. That is not to say that the hypothesis must be true: but it at least is at the present the most elegant and the most economical, as well, I think, as offering the best foundation for future extension. I propose to use it here, and to use it as a basis for my main task of

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surveying the evolution of brain and mind in the animal kingdom.

The concept of evolution is of fundamental importance to any general scheme of thought: and one of the ways in which its importance is greatest is in defining the place of mind within any such scheme. If bodies and their contained brains have evolved, why not the accompanying minds? Indeed, to-day the question can only be properly put the other way round: how can the minds *not* have evolved? Mental evolution can only have failed to occur if we deny to mind the principle of continuity, which is one of our axioms on the physical side: only, that is to say, if the world ceases to be rational.

If we knew nothing of a nature intermediate between ourselves and rocks or clouds, it would be permissible to believe that human consciousness was in its essence unique, with no ties binding it to other objects of the material universe; and this attitude was still possible so long as the theory of special creation held the field. But with the demonstration that all life was one, and further, that it was a product of the one matter of which all objects in the universe are made, such a distinction was no longer possible. Through our knowledge of ourselves, mind and living matter are seen to be connected. Through our knowledge of evolution, mind is linked with all matter.

It is therefore of considerable interest to look closely into the evolution of brain on the one hand, and of behaviour on the other.

So far as we know, true conscious processes—nervous processes accompanying conscious psychical

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activity—are in man confined not only to the brain, but to a restricted part of it. In spite of the complexity of the spinal cord, and still more of the medulla and cerebellum, no process confined to these structures involves consciousness. Consciousness, so far as any experiments take us, is associated only with the fore-brain, and almost solely with the so-called cerebral cortex—the much-folded layer of grey matter covering the cerebral hemispheres.

The essential part of this organ consists of millions upon millions of nerve-cells, each with a large number of branches, so that in all probability any cell can be connected comparatively readily with any other cell. Different regions, each comprising huge numbers of cells, are associated with different functions and different psychic processes. In all probability, again, every conscious process is associated with the activity not of one, but of a very great many cortical cells simultaneously.

The nervous processes involved, although an extension of the reflex arc principle, are strictly speaking not reflex. When an image is perceived or recalled in consciousness, there need not be action: the reflex arc is broken in its centre, and at the break thousands instead of tens of cell-junctions are brought into action. A high intensity of consciousness only seems to be possible where there is this gap between stimulus and response, and where there is this new type of arrangement where a great number of connected cells are excited at one instant of time.

The “lower” parts of the brain consist also of great numbers of branching cells and their prolongations.

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In these, although one of the two great functions of the cerebral cortex, namely consciousness, is absent, the other is still present—namely the control and co-ordination of many activities of still lower parts of the nervous system, and, through them, of most of the simpler activities of the body as a whole.

In the cerebellum, for instance, there is a co-ordination of most of the incoming and outgoing messages necessary for balance and the maintenance of posture; in the medulla is the centre for controlling the mechanism of breathing; and so forth.

In the spinal cord, on the other hand, the main function is a simpler reflex activity. In an animal completely deprived of its brain, many stimuli will still provoke action, and action of an apparently purposive kind. Everyone has read of the activities of brainless frogs—they have found their way into all the text-books. But there is another experiment of the same nature which is more spectacular and whose performance at the same time may be regarded as a virtuous act. In the southern United States one of the most unpleasant animals is the Copperhead—a poisonous and sluggish snake, so sluggish as often to allow itself to be trodden on, but not too sluggish then to bite. If you decapitate one of these, you will be doing a public service. In addition, you can study the physiology of the reptilian nervous system. Stretch the decapitated creature out in a straight line. So long as you do not touch it, it remains quiescent; but pinch the tail, and the headless animal will coil in its regular spiral and strike in the direction of the pinch.

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You may be perfectly aware of its headlessness; but you will find it very hard not to draw your hand away.

There are touch-organs in the animal's skin; from these, sensory nerves run to the spinal cord: there they are connected with the origins of various motor nerves; and these in their turn activate the muscles concerned in coiling and striking. In other words, the performance of this particular set of actions is potentially given in something which the Copperhead has inherited with the rest of his peculiarities—certain sense-organs, certain muscles, and a particular arrangement of conducting paths, the nervous connection, between the one and the other. It is given in just the same sort of way as the performances of a clockwork toy are potentially given in the construction of its clockwork mechanism.

As we go down the animal scale, we find some very radical alterations in the nervous mechanism. In man the brain is large relative to the spinal cord, the cortex is large relative to the brain. As we go from higher to lower vertebrates, we find a decrease in the relative size, first of cortex and indeed of cerebral hemispheres, secondly of brain as a whole. Finally in *Amphioxus*, which must be a comparatively close relative of the ancestor of all Vertebrates, there is nothing to which the word brain can properly be applied—only a forward section of the nerve-cord slightly modified in connection with the receiving of messages from the specially sensitive front end of the animal.

Essentially the same is true for all the other great groups of animals which have reached high degrees

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of nervous specialization—the Molluscs, the Crustacea, the Spiders and the Insects. In the lower members of all, we find a nervous system consisting of cords of nerve-like fibres (the conducting cables), connecting swellings or ganglia which contain nerve-cells (the exchanges), and the ganglia of the head region, scarcely differ from those of other regions, the whole system built upon the reflex arc principle.

Nervous evolution consists in the enlargement and fusion of a number of the most anterior of the ganglia to form a mass of nervous matter usually larger than any other in the body, different in its general structure, and with some sort of controlling function over the remainder of the nervous system—in other words, a brain, in which the reflex principle is gradually modified to that of association centres and multiple excitation seen in the cortex.

There is then a certain general grade of animal organization, attained not only by the simplest Vertebrates (Chordates), Molluscs and Arthropods, but also by the Annelids, Echinoderms, Molluscoidea, Nematodes and Flatworms (and independently attained several times in the course of animal evolution), a grade in which there is a centralized nervous system in the shape of a cord or cords with ganglia upon it, but in which there is no true brain.

Animals of such a grade, although their nervous organization is so comparatively simple, yet possess a considerable complexity of general structure. It is accordingly with considerable curiosity that we turn to ask what may be the nervous mechanism of still simpler forms, such as Coelenterates—jellyfish, sea-anemones, polyps—and Sponges.

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Our curiosity is justified. We here find a remarkable state of affairs. There is in sea-anemones, for instance, no central nervous system whatever. The nervous system of these animals consists only of a so-called nerve-net—an irregular network of nerve cells and fibres spreading, now more now less thickly, just below the surface of the whole body.

This primitive arrangement, it is worth noting, may persist along with the higher centralized arrangement. An earthworm possesses a well-developed nerve-net over most of its body in addition to its prominent central nerve-cord. Even in ourselves, nerve-nets persist in places where complicated responses are not wanted, as in the lining of the intestine. Such persistences of low organs (and organisms) by the side of high are a general feature of evolution.

Various grades of complication of the nerve-net are met with. In some forms parts of it show signs of condensing to more definite structures, as in the nerve-rings near the edge of the bell in jellyfish—the first steps towards the evolution of a centralized nervous system. In the other direction, however, not only do we find this centralization reduced to nothing, but the nervous system itself, in so far as separate from sense-organs and muscles, tends to disappear.

It is as well here to remind ourselves that it is an artificial distinction which makes this separation. The nervous system is, from a functional point of view, only part of the system which may be called sensori-motor, or still more generally, receptor-effector—the system which mediates between outer



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world and organism, which makes it possible for the organism to give appropriate responses to the multifarious changes affecting it. This system, in its developed condition, consists first of a receptor portion—the sense-organs and internal receptors, tuned to the types of outer and inner event; then of an effector portion—the glands and muscles which may be set into action; and finally of an adjustor portion—the central part of the nervous system, by whose activity the incoming impulses are sorted, guided, co-ordinated, and, in a word, adjusted to the activities of the animal.

Now in some Cœlenterates, this adjustor portion is wholly absent. The sensory cells, as often occurs, are at the same time nervous, in that while their outer portion is adapted to receiving stimuli from the world without, their inner end is prolonged into a fibre of a nervous nature, capable of efficiently conducting stimuli. But this conducting fibre does not run to a nervous organ, a nervous exchange, where it can make various connections. It runs directly to muscle. The sensori-motor mechanism is thus reduced to what would at first sight appear to be its simplest terms: stimuli from the outer world are translated by the sensory cells into messages which run directly to the muscles which are to be touched into action. The connection is given from the outset, and is always there, always the same; differences in response can only depend on difference of physiological state in the sensori-motor mechanism, not in difference of connection or path.

As G. H. Parker has pointed out, this implies a very different conception of the nature and function

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of "sense-organs" from our notions of every day. If we were asked to define the biological significance of a sense-organ in the most general terms, we should most of us say that it was an organ which gave an organism information about changes in the outer world. That is no doubt true for the higher animals and for ourselves: but it cannot be true for the lowly creatures we have just been describing.

Their muscles are not given information about changes in the outer world: they are made to contract. Action is a muscle's strong point, not the storage of facts or the sifting of evidence. And there is no central, adjustor mechanism in being to which the information can be presented for any such storage or sifting. Sense-organs, then, in their first origin, are not givers of information at all—they are organs for better-adapted action. When a jellyfish possesses eye-like structures, we have no right to say, as zoologists in the past have often said, that it can see—we ourselves do not see with our eyes, but with the combination eye-*plus*-cortex: we can say only that a jellyfish with eyes can react more nicely to small differences in light-intensity than can one with no eye or with a more primitive type.

I said above that the elimination of the central adjustor part of our system reduced it to what would appear its simplest terms. As a matter of fact, however, this is appearance only. The terms can be still further simplified, and are so in the group of Sponges.

All living matter is in some degree what we, perhaps metaphorically, call sensitive: in other words, it reacts to changes of various sorts in the outer world. A sense-organ is only an organ which has developed

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to a higher pitch the power of reacting to one or other of these outer stimuli, so that it can respond to lower intensities or smaller differences of stimulus than can crude primitive protoplasm.

Thus it is on the cards that we might find animals of so simple a construction and mode of life that they would not require fine shades of "sensibility," but could rely upon muscle itself responding to changes in environment readily enough to bring about the few and limited actions needful for existence. This, it would seem, is the case in Sponges, the most lowly-organized of all multicellular animals.<sup>1</sup> No one has ever succeeded in demonstrating either nerves or receptor organs in any member of the group, and the slow-working muscle-sphincters which open and close the incoming and outgoing apertures of the water-current which these animals make and sift for their living, appear to work in response to the direct action of external stimuli upon the fibres which compose them.

This brief descent into the lower regions of the animal kingdom will at least have served to show how profoundly different the sensori-motor mechanism can be on different levels of evolution, and how chary we must be of drawing conclusions from the study of

<sup>1</sup> It is of no value for our present purpose to pursue the question down into the single-celled Protozoa. Suffice it to say that they show among the simplest forms a total absence of all differentiation—reception, conduction and action all being carried on by one and the same undifferentiated protoplasm; and that many of the more complex species show structures apparently comparable in function with a well-organized nerve-net. The Metazoa, of course, start again from scratch in the matter of a common nervous system for the whole organism.

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organisms like ourselves or the other mammals, with a dominant brain, and applying them to other organisms like the lower worms with central nerve-cord, but no or negligible brain, or to still others like sea-anemones in which the nervous system is no more important for individuation than the rest of the body, and the organism, unlike ourselves, is but little more than the sum of its parts.

I propose now to pass from the machinery to the results—from nervous system to behaviour. The term animal behaviour has largely supplanted that of comparative psychology, for the very reason we have above mentioned—the difficulty in lower organisms of drawing far-reaching conclusions as to the mental processes accompanying action. Of course, all psychology, except the purely introspective, is based entirely upon interpretation of behaviour. Until the day when telepathy shall be a practicable art, we must be dependent upon indirect evidence for knowledge of the bare existence of mind even in other human beings. There, the probability of mind of the same special nature as each one of us knows exists in himself as result of direct experience is so great as to constitute certainty. In the higher vertebrates, we can still say that it is a certainty that a mind of the same general nature as our own exists in them: and so on, with gradually diminishing degrees of probability, down the scale; until if you were asked whether an oyster or a tapeworm possessed mind, the question becomes meaningless (because unanswerable) as a particular problem, and can only be answered, and that in a very partial sense, by reference to general evolutionary and philosophical

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principles. But behaviour is directly observable; and a study of this reveals a most interesting evolutionary progress.

The organisms that from one point of view are the simplest, namely the single-celled Protozoa, show two main kinds of reactions, which I may characterize as the reflex and the tropistic.

A reflex action in a higher animal is, of course, one which depends simply upon the existence of predetermined nervous connections, viâ the central nervous system, between sense-organs and muscles, and is, or at least can be, independent of the will. It is not especially concerned with orienting the organism in relation to the direction of the stimulus. In single-celled organisms there is no central nervous system: but they may perform actions of the reflex type, in which special movements are carried out in response to stimuli owing to the existence of such-and-such effector organs and such-and-such conducting mechanisms. The difference between true reflexes and the reflex-type reactions of Protozoa is that the Protozoa usually possesses an extremely limited repertory of such actions, and that often the whole body, instead of merely a part, reacts in a reflex manner. A good example of such a reflex of the whole animal is seen in the so-called avoiding reaction of the common infusorian *Paramecium*. This can be called forth by very various stimuli, generally of a noxious nature—by contact with obstacles, by heat, by various chemical substances. It consists in a cessation of the animal's normal forward swimming movement, followed by backing, turning, and then advance in a new direction. This

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is the most important of the few reactions possessed by *Paramecium*, and it relies chiefly on this to extricate itself from the difficulties that may befall it. If the performance of this reaction at the first time of asking does not take the animal away from the unpleasant stimulus which called it forth, the reaction is tried again, and so on until the *Paramecium* either escapes or perishes. This naïve but effective method is called by most zoologists the method of Simple Trial and Error—the blind repetition of an automatic action whose performance each time opens up a slightly new field to its performer.

A tropistic reaction, on the other hand, is one in which the *direction* of the stimulus is all-important, for the animal reacts by orienting itself in a particular way with reference to this direction. The most familiar cases of such directional reactions are brought about by light—moths move toward a light, blow-fly maggots away from it; the one animal, therefore, being styled positively, the other negatively, phototropic.

*Paramecium* shows a good tropistic reaction on being placed in an electric current, when it swims towards the cathode (negative pole). The reaction depends upon the way the animal becomes oriented relatively to the current. This is brought about by the current's action on the cilia with which it swims. These normally beat backwards with a strong stroke, and are then brought forward with a weaker motion again. The action is like that of a fisherman casting, the cast representing the strong backward beat. When a current is passed, the cilia on the cathode side, for some as yet imperfectly understood

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reason, are reversed, and they alone. Thus, however the animal is oriented at the start, it will eventually bring up with its anterior end facing the cathode, and will then continue to move in that direction because with ordinary strength of current fewer cilia are reversed than remain normal. Here then the animal is oriented by a direct action of the stimulus upon the locomotor organs, and by the same agency is kept in the same straight and narrow way. The Paramecium in an electric field is not going from greater to lower levels of intensity of stimulus, or vice versa: it is moving in a certain direction because the stimulus is directional and acts more or less directly upon the animal's locomotor machinery. The effect of electric currents is a particularly illuminating one, since the stimulus is not found in the animal's normal environment.

I must be very brief in my survey of the evolution of behaviour. Complications are added to the first or reflex type of behaviour in various ways. In the first place, a number of reflex reactions may be possible to the same animal, and different ones may come into play according to the type or intensity of stimulus, or if the same stimulus is continued, the capacity for performing first one and then another of the reactions may wear out, through physiological fatigue, and in turn. So the unicellular Stentor "tries" several reactions one after the other in response to repeated slight taps with a fine glass rod.

This stage, however, is not reached all at once in the multicellular animals. Here, in them, as we have seen, life was confronted at the start with the problem of correlating the separate cells and parts of the body.

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For the early Metazoa have to start at a lower level of co-ordination of parts than the Protozoa from which they sprang. In a sea-anemone, for example, this process is accomplished in a very primitive fashion—by putting together, so to speak, a number of parts, each a unit constructed so as to work in a way which is in ordinary circumstances adapted to the animal's needs. But true co-ordination—the influencing of one part by another, or the control of outlying members by a central organ such as the brain—all this is almost or wholly absent.

A sea-anemone's tentacles, for instance, bend towards the mouth when stimulated: but even after they have been cut off they continue, on stimulation, to bend towards where the mouth ought to be. In the same way, the creeping basal disc continues to creep if the body is severed from it. Most illuminating of all is the behaviour of tentacles when repeatedly stimulated with food. After a time, they do not contract any more. This seems to be, and is, an admirably adaptive response, which normally prevents the animal becoming over-gorged with food. But if care is taken to ply the tentacles on one side only with food till they are thus fatigued, those on the other side are uninfluenced and will shove food into the already full stomach as merrily as ever, showing that the stoppage of the tentacles is a mere local fatigue, not determined centrally by a central nervous system as would be the case in higher animals.

What individuality the creature possesses is given it by the general physical cohesion of its parts, much as in a crystal or a rock. Of that higher degree of



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individuation which is given by the reference of messages from all parts to a cerebral head-quarters for action, there is scarcely a trace, nor, *a fortiori*, of the mental individuation which we call personality.

With the advent of a central nerve-cord, however, the animal can again begin to react as a whole as did its single-celled ancestors, a single stimulus sufficing, if need be, to set off the whole body into action.

Now on this new plane, with the thousands of nerve-cells and hundreds of thousands of nerve-paths present in the central nervous system, it is easy to introduce new complexity of reflex action. We get chain-reflexes, in which an external stimulus determines a first reflex, the first a second, the second a third, and so on. An example of this is the catching and swallowing of prey by a frog, where the sight of a small moving object sets the animal after it, its nearer presence causes the tongue to be shot out, its presence in the mouth (when the animal has been successful!) causes movements which bring it back to the opening of the gullet, its presence there a swallowing of it, by the gullet's peristaltic action.

The complex reflexes merge into instinct: and it is very difficult to draw a reasonably sharp line between the two. One criterion that has been employed is to define as an instinct any non-tropistic and unreasoned activity in which the whole organism is involved, and to confine the term reflex to actions of its parts separately. Thus one may legitimately, I think, distinguish between the coil-and-strike reflex of the decapitated Copperhead, blind, automatic and invariable, and the attacking instinct of the intact animal, where the same reflex is utilized as a basis,

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but is guided by the sense-organs, and may be inhibited, for instance by fear, in the interests of the animal as a whole. Thus again, the action of the Yucca-moth, *Pronuba*, in gathering pollen from the Yucca's stamens, rolling it into a ball, and pressing it into the flower's cup-shaped pistil (where it will fertilize the ovules, which will grow to seeds and so give food to the eggs that the moth proceeds to lay in the plant's ovary)—such an action is neither purely reflex, nor consciously purposive ; it is instinctive ; it does not proceed from experience, has not been learnt, cannot envisage the whole end in view, since the moth need have no experience of Yucca flowers to perform it; and it is not a reflex because the organism as a whole is concerned in its execution. On the other hand, the egg-laying of the housefly is much more nearly a reflex action, taking place on substances giving off certain smells, some of them, such as decaying meat, suitable for the development of the young, others, such as inorganic substances smeared with assafoetida, wholly unsuitable. Very different stimuli will call forth the reaction in different species of fly, the smell of banana, for instance, causing egg-laying in the fruit-fly. Loeb attempts to include such actions under the rubric of tropisms, but it is both simpler and more correct to call them reflexes.

The tropisms meanwhile also continue to play an important rôle. Loeb has collected the evidence on the subject in his interesting book.<sup>1</sup>

It is perhaps the machinery of tropistic reaction

<sup>1</sup> *Forced Movements, Tropisms and Animal Conduct*. Philadelphia, 1918.

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which is of the greatest interest—the machinery and its frank automaticity.

In the case of phototropism, for example, the intensity of the light falling on the eyes determines, via the brain and nerve-cord, the strength of the impulses to the muscles which move the body. If one eye is more brightly illuminated than the other, the muscles on one side of the body will be more active than those on the other ; and the animal as it moves will turn until it is symmetrically placed with regard to the direction of the light. When this happens, the intensity of light falling on the two eyes will be equal, and the animal then continues to move on in a straight line, any deviation from which is automatically corrected. Whether the animal shall head towards or away from the light is determined by its physiological state, the inborn pattern residing in its nervous system, and the intensity of the light. Some animals, for instance, can be made to reverse their direction of phototropism by a change in the acidity of the water in which they are swimming, or by an increased intensity of illumination.

Various consequences flow from this. The old anthropomorphic idea that, for instance, animals move to or from light because they are “fond” of light or of darkness, has to go by the board. They are pushed, so to speak, into a given course by the direction of the light, which steers them as remorselessly as a rudder. That it is the direction of light and not the fact of illumination which determines their movements was shown by a simple experiment of Loeb. Full-grown Gold-Tail Moth (*Porthesia*) caterpillars are positively phototropic—in the old

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parlance, they like light and dislike darkness. But they can be made to pass from strong light into weak, provided simply that the direction of the light be suitable.

Not only that, but we can construct machines which will give us in many particulars startling parallels to the behaviour of lower organisms. Hammond, the American inventor, produced a delightful mechanism, irreverently dubbed the Selenium Dog. It consisted of a steerable box on wheels, driven by a motor. The steering gear was operated by two small electric motors, each connected with a selenium cell. The selenium cells were placed on either side of the "dog" behind a lens for focussing the light. As is well-known, the electrical resistance of selenium alters with the amount of light that falls upon it, and the connection between steering-motor and steering-gear was such that more light falling upon the selenium "eye" of one side allowed more current to pass, and turned the steering-wheel towards the same side.

The machine was, therefore, positively phototropic, and if you, armed with an electric torch, were left alone with it in a dark room, it would follow you about as persistently as Sherlock Holmes' opponents followed the glowing butt-end of his cigar, until, to get rid of its attentions, you would be forced to adopt the same ruse as he did.

Another and almost more striking instance is the nice selection in matters of diet shown by the "artificial amœba." If you put a drop of chloroform in water, and poke a tiny fragment of glass rod up against, or even into it, the drop refuses to have

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anything to do with it, and spews it out. If, however, you previously coat the glass with shellac, the drop accepts the morsel and sucks it into its interior. Shellac, however, is soluble in chloroform. It is accordingly dissolved, or, we may truthfully say, digested, since the prime and essential function of digestion is the getting of food-materials into solution. When it is all gone, the naked glass remains, and its surface-tension relations with the drop are such that it is ejected! These are not the precise methods by which, in the real *Amœba*, food-stuffs are digested and indigestible remains thrown out as *fæces*: none the less the example gives us very considerable food for thought. If the biologically advantageous behaviour of the *Amœba* be in any degree ascribable to true purpose, what about the essentially similar behaviour of the chloroform drop-let? It is an awful warning (to use the phraseology of those moral booklets on which youth used to be reared) of the dangers of anthropomorphizing animals, and of drawing conclusions that go beyond the facts.

Another example of the dangers of reading human mind into the behaviour of lower animals is seen in blow-fly maggots. These show marked negative phototropism, and can be made to crawl from one end to another of a long glass tube, like a flock of miniature and very silly sheep, as many times as you care to reverse its position in regard to a lamp or window, or, still better, if you have an electric light at either end of the tube, as many times as you care to switch one off and the other on.

But at the moment of reversal, you often see a

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certain hesitation, and indetermination, which has a very human look about it, as if they were taking stock of the new situation and trying to make up their minds what to do about it. In reality this hesitation appears to have no more to do with mind than does a sailing-boat's hanging in the wind—the two hesitations, indeed, seem to be essentially of the same nature.

The blow-fly larva, as it moves, is perpetually waving its front end from one side to the other: this front end is the most sensitive part, and in this way it explores a wider range of the environment. When the creature is moving directly away from the light and the direction of the light is suddenly reversed, one side of the head will, as a matter of mere chance, receive more illumination than the other. But before the photo-chemical processes thus initiated on this side of the head have had time to exert much effect, the instinctive side-to-side motion will have carried it across and exposed its other side to greater illumination. Thus it will usually need several head-swings before it is bent wholly round to a position in which one side is more illuminated than the other all the time.

Finally, I cannot refrain from mentioning the colour-change of the flounder as illustrating the lengths to which clockwork connections of receptors and effectors may go. Flounders, as you may see any day at the Plymouth Aquarium, adapt themselves in quite a few minutes and with extraordinary fidelity to the tone of their background. Not only that, but they also succeed in giving a very creditable imitation of its texture, their pattern being bold on

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pebbly gravel, fine-grained and uniform on sand. This result appears to be accomplished by means of direct connections between certain regions of the retina of the eye and certain regions of the skin. When a particular group of eye-receptors is stimulated by light, the resulting nerve-impulse is sent *viâ* the brain and spinal cord to a particular region of the skin, and there causes the local pigment cells to contract; while, vice versa, absence of stimulation for that particular retinal region—in other words, blackness—will permit the pigment-cells to expand to their fullest extent. By means of this indirect machinery, a rough picture of the background is reproduced on the skin of the upper surface.

As we ascend the animal scale, the clear-cut tropism becomes less and less important. Tropistic reaction continues to furnish the basis for much of the animal's behaviour, just as instinct furnishes the basis for much of our own behaviour. But in us instinct is almost invariably modified in the most marked way by experience and reason: and similarly in animals on the behaviour-level of higher insects, for instance, or of reptiles, simple tropisms are swallowed up in something more complex.

For example it can be established that to a low animal like the blow-fly maggot the only matter of moment is the total quantity of light which strikes it. Whether this proceeds from an intense pin-point or is diffused over a large source is immaterial. We all know, however, that this does not hold for the adults of many higher insects. The moth flies to the lamp, but hides from day: and, as a matter of fact, can in the laboratory be shown to respond quite differently to

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the small intense, and the large diffuse source of light.

A very curious special case, that of young turtles, has been analysed by Parker. The female loggerhead turtle lays her eggs in the sand. When the young hatch out, they always seem to find their way to the sea, whether it be visible to them or no. All sorts of explanations were put forward, mostly assuming some mystic innate knowledge on the part of the young reptile. Parker, however, has at length shown that it is based on a perfectly definite but unusual tropism. The animals orient themselves towards that direction in which the horizon is freest from obstruction. If he cleared away all the bush on the landward side of high-water mark, and put a row of dead branches in the sand on the seaward side of the eggs, the turtles no longer "felt" or "smelt" or "knew about" the sea, but walked straight away from it.

In the second place, tropism and instincts also become modified, as we have hinted, by the development of the powers of learning. The pecking of young chicks at their food is sometimes called instinctive, but the classic work of Lloyd Morgan showed that it is nothing of the kind. What is innate is the instinct or reflex to peck at any and every "interesting" object. New-hatched chicks kept away from older birds peck at bright pebbles, at noxious as well as edible caterpillars, at wasps as well as wheat-grains, at water, even at their own feet. Through the principles of learning enunciated by Thorndike, the stamping-in to behaviour of pleasurable and successful experiences, the stamping-out of



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unpleasantness and failure, in a remarkably short space of time they are found to be confining their attention to their proper food. A chick does not even know water when it sees it. Its only instinct on the subject is to drink when it is thirsty *and* when its beak comes in contact with water. And it will only come in contact with water accidentally, in the course of the random pecking we have just mentioned.

In the higher insects, a great multiplicity of complex special instincts arise with the enlargement of the primitive insect brain. It is impossible to reduce the behaviour of the Tortugas ant, for instance, which was studied by Mayer, to tropisms only. If one of these, questing about at some distance from home, discovers a large piece of food such as a dead fly, it at once returns to the nest. There it crosses feelers with all the ants it meets, and by this means generates a definite "excitement" in them. The excitement spreads, and a whole band of ants, apparently led by the original finder, sets out in the general direction of the food. When the swarm has reached about the right distance from the nest, it breaks up and the ants hunt about until the fly is discovered.

Now if the finder is taken up by a human being, just after it has started on its homeward journey, and lifted across to the neighbourhood of the nest, it communicates excitement as before to a number of its fellows, but when they set off, it is hardly ever in the right direction. Or if some disinfectant is smeared in its homeward path, and the finder crosses this, no excitement is generated when it rubs antennæ with other ants.

Thus the apparent "talking" by means of

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antennæ is here at least not true speech at all but based upon the simple sense of smell. Whether the apparent sense of direction exhibited by the swarm is really such, or is based again on smell—on the capacity to follow the finder's back-trail; and whether the apparent sense of distance shown by the swarm's breaking up when sufficiently far from the nest is really such, or depends on some capacity to react to the same number of steps on the outward as on the inward journey—these are points which we cannot yet decide. In any case, it is clear that several special and complicated mechanisms are involved.

It is, I think, evident that the contention, urged especially by Ray Lankester and Arthur Thomson, that there has been a fundamental divergence between Vertebrates and Arthropods (especially Insects) as regards behaviour, is a valid one. Even the highest Insects are found to be relatively small-brained (when due allowance has been made for differences in relative amount of muscle and skeleton dependent on differences in absolute size). They show many and well-defined reflexes and instincts, but comparatively little power of learning and profiting by experience.

The history of the Vertebrate, however, is largely a history of the acquisition of the power of learning and of the willingness to experiment.

Fish learn, but slowly on the whole, and poorly. So do Amphibia and Reptiles. Not only that, but they are, we may say, unenterprising. Take one single aspect of the matter—can you call to mind an example of a young fish or frog or tortoise indulging in play, or even picture the possibility of such

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sportiveness? Mammals like Porpoises and Dolphins play round the bows of ships, but not fish like sharks or bonitos.

Birds and Mammals show far larger powers. The basis for this advance is laid down in their physiology and mode of life :—constant temperature gives them the possibility of introducing far more finely-adjusted processes of brain and mind; and the long period of embryonic life, together with that of parental care following it, gives wholly new opportunities for increasing the size of brain and lengthening the period of learning—of passing from inexperience to experience, and indeed of allowing experience any large effect at all without in the meantime falling a victim to starvation or enemies.

The average bird seems stupider than the average mammal, but has a more intense and more varied emotional life. Since, however, it is the evolution of intelligence which has eventually brought life to new levels, it is on the mammals that our chief interest must be fixed.

There are, of course, all gradations of intelligence in mammals, as in men. But of the typical successful mammal of fair size and considerable activity, such as deer or horse or cat or fox, we may note one or two special points. In the first place, a rudimentary *tradition* has arisen: the young accompany the parents and are taught certain things—often indirectly, rarely directly—by them. This happens too in many birds. But the tradition never bridges more than one generation's span, and is, therefore, not cumulative, as in the human race. Then the young *play*. This gives the possibility of acquiring

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a new pitch of dexterity, and provides the opportunity for various experiments in behaviour. And finally they can *learn*, much and quickly, from experience.

But they are still largely tied down by their structure. The dexterity of the cat or the dog or the horse, for all its perfection, is a limited dexterity: the limbs are so beautifully adapted for certain functions that they are useless for others. And, as so often, specialization closes the door to progress.

Emancipation from water brought about new progress by confronting life with an environment which was more difficult than the old. The very necessity of surmounting these difficulties led in the long run to the calling into existence of new elaborations. The need for more support in air than water paved the way for the possibility of lifting the body off the ground—and this for new possibilities of speed. The need for protection against drying led to the evolution of new types of skin. The desirability of keeping the embryo moist and yet not having to be tied to breeding in the water, led to the evolution of the large-yolked, shell-protected egg of Reptiles, one of whose organs, the allantois, later made the placenta possible. So it was again in the Mammals. Emancipation from earth brought new problems: and their solution gave new possibilities. Arboreal life was the first step to man. Not only have we to acknowledge that the monkey type is ancestral to ourselves, but that it or some extremely similar type was a necessary one for the production of man or anything like him.

Arboreal life did many things. It released the

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limbs, and in particular the fore-limbs, from their pillar-like function of mere support. It made the hands instead of the snout and mouth the animal's chief testing organ. Thus when the forbears of man descended to ground life once again, they found it to their advantage to adopt the bipedal erect posture, so that their arms and hands could be left free. It made necessary a far greater variety of limb-movements, a far more accurate body-balance. It made necessary an increased power of rapid estimation of distance. Most important of all, it made sight instead of smell the dominant sense.

Thus both limb-structure and mind-structure became of necessity improved, especially in the direction of more varied response: and these improvements were one and all necessary before the human type could arise.

We may divide the mammals, from our present point of view, into five main grades—the primitive and sub-typical forms, the typical successful creatures, the tailed monkeys, the apes, and man.

Thorndike and other American workers have made extensive investigations on typical mammals, such as cat, raccoon, or pig. Their experiments show that there is scarcely any evidence for the existence of ideas or images in such forms. They can learn, for instance, how to undo very complicated fastenings, but the method of learning is usually the simple, primitive one of the trial of random movements, successful ones being "stamped in" to the nervous organization, unsuccessful ones "stamped out." It is the simple trial and error method, but immensely improved by the "retention

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of success." True imitation, contrary to popular belief, plays hardly any part.

With Monkeys, on the other hand, several new points are noticeable. For one thing, the initiative of the animals is far greater: they are always experimenting. Their free hands and nimble fingers itch to be employed, and they employ them as a child does, for the sake of doing something, of new sensations, and of the sense of power. They further show a slightly increased capacity for imitation, and, in general, their behaviour has progressed to a pitch at which it is hard to say whether or not true ideas or at least images must be postulated.

Of recent years, Koehler, the German psychologist, has introduced a rather different mode of approach. Instead of putting the animals in often very artificial situations, where the problem is, we may say, man-made, he presents them with the opportunity of solving problems for themselves, and problems not too unlike those to be met with in nature. An account of these may be found in his interesting book, *The Mentality of Apes*. The fundamental principle which has emerged from such work is this—that as we go up the vertebrate scale, the type of problem which can be grasped and solved as a single whole grows increasingly more complex. A fowl is helpless before a situation which a dog can grasp; aimless action follows in the one case, purposeful action in the other. In the same way, a dog is helpless before many problems which even a young child can understand and solve, just as a child often fails where a man succeeds. Or again a stupid man does not even see how to attack a mathematical

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exercise; a more intelligent person grasps its meaning, sets about looking in the right direction, and works it out; and the mathematically-gifted man not only grasps its meaning but may *see* the solution as well, all in a flash.

Koehler was also able to show that the highest non-human mammals, like chimpanzees, retained accurate memories of a situation much longer than lower forms, much longer even than the intelligent dog. For instance, when he buried some tit-bit under the eyes of a chimpanzee, but outside the cage, and then during the night smoothed all the surrounding earth so that no visible traces of the burial remained, some animals, even after twenty-four hours, would go straight to the spot, or very close to it, and begin digging; while a dog, on the other hand, in the same circumstances, only remembered for an hour or so at most, a hen for a few minutes.

This Koehler interprets as implying true memory—the formation and retention of a true memory-image similar to our own images, and not merely the lower grade of memory involved in *doing* better or quicker a second time something which after much trial and error has led to fruition when first attempted. Thus if we look at the question objectively we see that the progress of mind in higher vertebrates means largely the possibility of solving “by intuition” problems of increasing complexity—problems involving the simultaneous grasp of increasingly numerous separate factors: and, on the other hand, of retaining an image or its cerebral counterpart for longer and longer periods of time.

From this point of view, Bergson’s stressing of

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intuition is profound and right. A problem is presented: the solution either is or is not found: if found it issues in a single indivisible course of action directed towards an end. On the other hand, in the human level it is found that the methods of step-by-step reasoning are often the tortoise to the intuitive hare, and may arrive eventually at further goals than any intuition alone can even see.

The hen successfully running round the back of a wire barrier separating it from its food, is achieving something impossible to a worm or a sea-urchin, or, indeed, to many insects, and is showing, in primitive degree no doubt, but none the less definitely, something of the faculty which enables a judge to pronounce a sentence, a statesman to decide upon a course of action, or a mathematician or man of science to solve a difficult theoretical problem.

Let us for a moment look back and see what is involved in the mind of the most primitive man or even the highest of anthropoid.

Reflex actions, unconscious and predetermined by heredity, are at the basis of most of his ordinary activities. Simple tropisms, on the other hand, have been almost completely swallowed up in later developments, and cannot be detected as such. Instincts, by which we mean the predetermined impulse to react to certain stimuli in a certain general way, but with the details of the reaction not laid down, are also of fundamental importance, though marked in the same way. If the reflexes provide the possibility of unconscious action, the instincts canalize and direct the creature's behaviour. However, the power of learning, both in acquiring greater motor dexterity



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and in modifying reaction according to experience, comes to overlie instinct and tropism.

Then comes image-formation, giving an enormously greater precision and continuity. Then in man, generalization; and with this the knowledge and experience of life changes from a patchwork or mosaic to a continuous whole, from a mere diary to an ordered drama.

Each type of reaction—reflex, instinct, imagery, reason—is necessary to the type of behaviour as a whole; each is the basis for the mode of reaction above it, and may intrude itself upwards, often unpleasantly enough, into the field of reasoned consciousness. This reasoned consciousness we are apt to think of as the only essential kernel of our behaviour; but the study of behaviour from the evolutionary point of view joins hands with the discoveries of modern psychology as to the rôle of the subconscious, to shatter that unpleasant illusion. Too often when instincts intrude into reason, they are rationalized—that is, consciousness finds reasons why we should act upon the instincts. Rationalization is not reason, any more than stucco over brick is marble: but the inexperienced are in both cases apt to confuse the imitation with the genuine article.

From the broadest standpoint of all we may sum up thus. The lowest organisms have merely physical individuality. Then comes what we may call nervous individuality, which is physical individuality of a peculiarly efficient sort, with greater coherence, greater co-ordination of parts than is possible through other physical means.

Gradually consciousness begins to play more and

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more of a useful rôle. But at first consciousness is fragmentary ; and the mental evolution of higher animals consists in binding together the parts of consciousness into more and more of a unity, until finally in man life attains to full mental individuality, to which the name of personality is usually given.

Before concluding it will be worth while to make another attempt at fitting human mind into its proper place in the general biological scheme. In most general terms, we may say that between man and all other organisms there has been (to use a term borrowed from another branch of science) an evolutionary critical point. Before this point, mind, though present and significant, was subordinate to other attributes of life, or at least was not the dominant attribute; but after this point, its biological dominance is undoubted.

We might perhaps claim that another critical point must have been passed through ages before, when mind was promoted from being an inevitable and secondary accompaniment of all vital processes, biologically accidental, to becoming the primary function of the processes of brain, the one mind-organ, and achieving specific biological significance. This presumably occurred after a central nervous system had been developed, and when a certain degree of complexity had been reached by the brain: but we have no means of knowing exactly what this degree of complexity is.

The biological difference between men and all other animals is enormous. Even in the highest apes there is no permanent tradition. There is no true speech, with names for things, but only symbols

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for feelings. There is apparently no, or extremely little, capacity for generalization. Individual apes, as Koehler has shown, may exhibit a marked degree of real intelligence, solving really new problems for themselves. But this has very little significance for the species, owing to its sporadic occurrence and its failure to be imitated or incorporated into any tradition.

One single change between ape and man has made all the difference—the change in brain-structure which has made possible the framing of general concepts. This made possible the giving of names first to objects and then to ideas. This implies true speech ; and speech in its turn makes possible not only far greater rapidity of learning, far fuller realization of inborn potentialities, but provides the basis for tradition. The existence of tradition means that individuals can profit not merely by their own, or even their parents' experience, but by that of the race. Within the ambit of the individual's own psycho-neural organization, the change is equally important. Once the framing of concepts is made possible, a wholly new world is opened up, since concepts can be of any grade of complexity, and each advance achieved must inevitably be merely the basis for a fresh possibility of progress. That is most diagrammatically seen in the field of the intellect. It is only too obvious to any one engaged in scientific work, for instance, how each new discovery is a door through which an army of new unsolved problems crowd in. Nor is the process a mere quantitative amassing of more facts and more ideas ; the man of great mind is one whose scale of ideas grows with

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his growth, or, if you prefer it, who succeeds in organizing and marshalling an increasing number of facts and ideas under the banner of a single broad idea.

This gives to man, and to man alone, the power of permanently-continued growth. The growth is not of the body, but of the mind. True that many men do not avail themselves of the power: but it is there none the less. Nor is it present solely in the sphere of knowledge. This continued development is possible to the artistic faculty, as evinced by Michaelangelo, or Goethe, or Shakespeare, or Beethoven; and it is possible to the moral and spiritual faculties, as every man or woman of truly great (and not merely strong) character reveals to us.

This power of continued growth has been stressed by General Smuts in his recent book, *Holism and Evolution*, as one of the highest attributes of personality: and, even from the rather different standpoint of the biologist, I think that he is right.

With the power of organizing mental architecture in relation not only to past individual experience, not only to past racial experience, but also to general concepts such as purpose, duty, piety, truth, efficiency, holiness, beauty, self-sacrifice, honesty and the like, all sorts of new and often unexpected consequences follow. In the first place, such general ideas transcend experience; they refer not only to the past but to the future, not only to the actual and the historical, but to the potential and the ideal. The idea of truth includes at once and automatically the idea of absolute and complete truth as well as truth relative and limited, however unattainable such

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absoluteness and completeness may be. The idea of goodness implies an ideal standard. Once general ideas of value have become possible at all, they automatically bring with them as a necessary by-product this inclusion of an ideal. Even general ideas so simple as giving a name to a class of objects involve the erection of a standard; to be able to say that the object round which sat King Arthur's knights and another marble-topped object in a cheap restaurant are both tables, involves knowing something of the nature of tables in general, apart from any particular table. But to have general ideas of value automatically involves knowing something about ideals of direction as well as about general nature; and thus they at once become normative for conduct.

Further, not only can the mental organism of man reach to new complexities of architecture, but its plasticity is greatly increased, so that its architecture may be on any scale and in any style.

As a very crude metaphor, it may perhaps be said that the elemental instincts concerned with nutrition, preservation from danger, and sex are the *vis a tergo* in the mental life, while the general ideas supply the particular goals of its growth. Another metaphorical way of putting the matter is to say that the simple instincts provide the raw material for the building and dictate its general utilitarian function; while the more complex ideas design its form and bestow on it its style. But all such metaphors are unsatisfactory, since the mind in a human individual is a mental organism, an organized living whole, capable of mental metabolism, mental growth and mental development. For this reason, each

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higher stage of mental life incorporates what has gone before, and each higher mental function which develops includes lower mental functions, and in so including them modifies them.

As Whitehead so well says, an electron within an atom is not the same thing as a free electron : its behaviour is modified by its companions, and is only intelligible in relation to the total of their behaviour—*i.e.* to the atom as a whole. In the same way, the sex-impulse and the fear-impulse may both enter into some complex sentiment such as the religious sentiment : however, not only is the religious sentiment not on that account *only* sex and fear (an elementary but not always avoided error), but the sex-component and the fear-component, so long as they remain components of the more complex mental structure, thereby cease being simple sex or simple fear.

The two fallacies may be simply illustrated from pure biology. Both mammals and birds are derived from reptiles : they would not be what they are if they had not reptilian ancestors : but their own particular natures are thereby not defined ; though descended from reptiles, they are different from and more than reptiles. Again, the body is built up of cells. But the cell in the body is influenced by the rest of the body, and is not the same as the isolated cell ; as is immediately proved by cultivating it in tissue-culture, when its behaviour is quite different from its behaviour within the body.

The infant is provided with a few instincts, with sense-organs for the registering of events, and with a cerebral cortex capable not only of associating and learning, but of generalizing. Its experience and its

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mental life thus become organized. It first has to organize the impressions derived from the various senses into a single unified mode of experience. The most obvious example of this is the co-ordination of visual and tactile perceptions to give the idea of form, so that after a certain amount of such experience a pure visual pattern of light and shade, like that produced on the retina by a sphere illuminated from one side, will be recognized as derived from a solid object of a particular shape. In later life the same process may go on upon a higher intellectual plane, as when by means of elaborate analysis the scientist comes to understand that heat and kinetic energy and electric power are all manifestations of one energy, and can apprehend apparently different kinds of manifestations of reality as all transformations of one underlying matter-in-motion.

But parallel with the organization of experience derived from the senses goes the organization of the channels to action. The impulses to action are at first as uncorrelated in a baby as in a bird, as any one knows who has had children of his own. When one impulse is fatigued or satisfied, another comes to the surface. The only correlation lies in the fact that the inherited impulses do cover all the necessary activities of life, and that since their strengths vary with satiety and the reverse, and with physiological fatigue, as a matter of fact all will come into action in due course. The arrangement works, as does that simple one adopted by most birds in feeding their young, of giving the morsel to the nearest and widest beak: the strongest youngster will get all the first bits until he is satisfied, and will then gape no longer,

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leaving the next strongest to get his share. But it is a jig-saw, a mosaic of an arrangement, not an organization.

Conflicts arise between the different impulses of the child, and between what the child wants and what its parents allow. Through conflict the two impulses are brought together in consciousness and are forced to come to an arrangement.

It is not merely conflict as such which is of such importance, but the fact that conflict comes into consciousness ; because by this means it is brought into relation with experience and the possibility is given of a resolution of the conflict by incorporating both conflicting impulses in a more complex but single or unified activity.

It is these two main facts which give us the variety of human minds—the fact that experience may be intellectually organized to different degrees and in different ways or under different heads ; and the fact that different types of conflict arise, and that each may be resolved in different ways. The two sets of fact, of course, interpenetrate, for the way in which knowledge is organized may well depend on the way a particular conflict has been resolved ; and knowledge itself may help to a new and better resolution of a conflict.

It is from the attempts at resolving conflicts that there spring most of the conditions dealt with by the psychotherapist. It is not my purpose to enter into these here, but I would just remind you that in some persons conflict is avoided by temporary and alternate suppression of the two conflicting impulses ; in others by an attempt at permanent suppression,



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as in many men who succeed in pretty thoroughly suppressing fear ; in still others by repression, which if unsuccessful may lead not only to neurasthenic conditions but even to dissociation of the personality ; in others by some form of rationalization, as where it is believed that magic or ritual will wipe out the effects of indulgence in one of the conflicting impulses ; or by sublimation in the simple sense, when a new object is found for the one impulse which is more in accord with the other impulse with which the first is in conflict ; or by sublimation in the extended sense, when by reflection and experience it is found that both apparently conflicting impulses can be combined without antagonism in a higher mode of activity.<sup>1</sup> This last type of resolution is perhaps more easily understood from its æsthetic parallel, as where the conflict of will and event is somehow fused into the unity of artistic rightness in a great tragic work of art. On the intellectual side it is more baldly illustrated by the reconciliation, through new discovery, of apparently incompatible sets of facts—as for instance of early Mendelism and biometrics in modern genetics, or the Newtonian mechanics and the later facts which contradicted it in Relativity Theory.

The different modes of intellectual organization are equally well worth considering. An African savage will see reality in terms of cause and effect, but the

<sup>1</sup> These two types of sublimation should be distinguished by separate terms. So far as I am aware, this has not been done, apparently owing to the preoccupation of psychotherapists with the abnormal and of academic psychologists with purely analytic study.

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cause is the illusory cause of magic. In the intellectual web of an analytic man of science, reality is spun out into uncountable manifestations of one primal unity, all connected by unimpassioned and universal law. Certain types of poet and artist organize experience by projecting into it their own sensations and intuitions, thereby distorting the external world, but creating new realities in this synthesis of outer fact and inner idea. The mediæval theologian hung experience on an elaborate scaffolding all logically built from a few simple premisses as to the nature of God and the incarnation, atonement and resurrection of Christ. The madman organizes his world of experience round one dominant delusion.

It is extremely important for us to remember that such diverse formulations are all methods of giving experience an intellectual organization, and that they all, even the madman's, may satisfy the rational intellect of their creators.

From the broad biological point of view, these facts are important in giving an unexampled variety to human minds. It is no exaggeration to say that one adult human mind may differ from a second as much as does a horse from a whale or a dog from a bee, and may differ from a third mind in the same sort of higher-and-lower way as does a dog from a worm or a jelly-fish. The actual biological divergences in organization between two human minds may be as great as the differences brought about by divergent evolution between two major groups of the animal kingdom, and the differences in level between one mind and another may be

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as great as those achieved in tens of millions of years by evolutionary progress.

On the other hand, the extent of these differences is often obscured by the very plasticity which in the first instance makes them possible. The two divergent minds can generally learn to come together on common ground; the mind that is at a low level can generally learn to raise itself higher in a short time. The possibility of such rapid changes, and the possibility of even highly divergent minds coming to a common understanding, makes the differences seem less important than those rigid ones between animal groups which are fixed in the immemorial germ-plasm. But this does not make them less real. Man is, from the physical point of view, but a single species : from the mental point of view he is a whole new kingdom.

I must bring this lecture to a close. You must pardon its discursiveness; but biology is a large field in which to take an hour's ramble. I would like, however, to end with an attempt at a summary of my main points.

I make the assumption, warranted by its simplicity and justifiably to be held until such time as evidence against it is produced, that mind and matter are two abstractions from reality, and that all existence involves the occurrence of processes of the same order as those which we call mental or conscious, as well as processes of the material order. In this I am in the good company of Lloyd Morgan and Whitehead.

In the lowest forms of life, as in non-living matter, such processes of the mental order, although

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necessary concomitants of all activity, are diffuse and of low intensity, unspecialized and subordinate. Through the evolution of the nervous system and sense-organs they gradually became intensified, specialized and localized, and of increasing biological importance to the organism.

The evolution of nerves was the first step: the passage from nerve-net to central nervous system built on the reflex system was the next. But both these steps were doubtless more important in giving greater motor precision than in raising mental intensity. Next came the specialization of sense-organs, raising the organism from its primitive "dim and windowless existence" and putting it in touch with more of the outer world's happenings—more in quantity, more in quality, more in accuracy and more in range of distance. But to make use of this information, a co-ordinating mechanism is needed; and from the need of this co-ordination arose the brain. The more complex the animal's existence, the more needful that this co-ordination should extend not merely through all parts of the brain at one instant, but through time as well. Hence the elaboration of those nervous structures which underlie memory, association and learning.

At this stage of evolution, it is often profitable not to react directly to a sense-impression or an internal impulse, but to utilize the experience later in modifying some other reaction. It would appear probable that the attainment of this stage marked the moment at which consciousness came of age and mental processes took on dominant rôles in the

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evolutionary drama. When brain-machinery is evolved whose function is not wholly exhausted in directing immediate action, but is partly concerned with recording for future action, then the mind, it seems, passes its first critical stage and becomes of direct and primary biological importance, no longer secondary and accidental.

The second great critical point, passed only by the one evolutionary line of man, was the power of generalization, which permitted the organism to construct a mental microcosm corresponding much more thoroughly with the external macrocosm than had ever before been possible. It also brought with it all sorts of by-products, all of which, however, in the long run seem to owe their existence to the one fact of having passed the critical point and attained the power of generalization. This one power opens the door to infinity—the infinity of variety in possible combinations, the infinity of possible progress in concrete knowledge, and the normative infinity of the absolute and the ideal.

This, like the previous steps in mental evolution, seems to have been made possible by a definite step in physical evolution. Previously we had the steps *no nerves* to *nerves*; *nerve-net* to *reflex-arc system*; *no association* to *association*, with the introduction of what Lloyd Morgan calls prospective reference. In the human cerebral cortex it would appear that the reflex mechanism has been transcended by a new mechanism—a mechanism for throwing thousands of association-neurons into simultaneous intense activity, while at the same time making it possible to cut down the effector outflow

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to negligible proportions. Whatever the mechanism, however, mind in man has passed not one but two new critical points. It has become not only a function of biological importance, but the function of greatest biological importance ; and it has reached a stage at which mental ends can be pursued for their own sake, without reference to their biological importance. Thus by becoming life's most successful servant it has been enabled in some cases to emancipate itself and to appear as life's master.

Only by including the facts of biology in our survey, as well as those of psychology and physiology, can we hope to see the place of mind in its proper perspective to the rest of nature. For biology alone can give a broad account of the evolutionary movement, and the movement of mind in evolution is of equal importance with its present nature and powers in the human species. For the truth is that the evolution of life may be considered as pre-eminently an improvement of the status of mind in the universe: in the beginning one among a number of properties of the stuff of reality, something which just happened to be: later, a tool in the struggle of life: later still, not merely a tool of life, but her most important tool: and finally, an activity for its own sake, with its own ends, using the other properties of life to bring those ends of its own to pass; no longer a tool of life, but wielding the rest of life as its tool.

Think of Galileo not resting until he penetrated the mysteries of motion and force; of Jesus or of Gautama not resting until they could find a way of life in which the inner reality of aspiration could be in harmony with the outer reality of the world; of

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Michelangelo not resting until he could embody its experience in the complete rightness of artistic expression; of Edison not resting until he could control matter and make it perform his will; in all such men the mind is bending the body to the achievement of ends which are its own, new, undreamt of by pre-human life. Think once more that such men and all men, mind and all, are but particular arrangements of the universal world-stuff, built up into their special form as the last and most remarkable achievement of a thousand million years of evolution. And when you have thus thought both of the men themselves and of their genetic relation with the rest of the universe, you will perhaps agree with me that this biological vision of the rise of mind to the point at which it can grasp outer fact in one coherent scheme of knowledge, control outer fact for its own practical purposes, and erect its own scheme of ends and values in accordance with which it begins to direct the movement of outer fact, helps as much as any other possible piece of knowledge to define the place of mind in nature. It shows us that one at least of the great long-range movements of the universe, and that one of which we ourselves form part, consists in essence in subordinating more and more of the other activities of reality to the power of the mind.

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By R. J. S. M'DOWALL, D.Sc., M.B., F.R.C.P.(Ed.),  
Professor of Physiology, King's College, Uni-  
versity of London.

To a physiologist, whose vocation it is to study the nature of the functions of living tissue, the problem of the mind is essentially a material one concerning the functions of certain parts of the body. To him the process of thought by which the mind expresses itself is a function of the nervous system, and as such is not appreciably different from any other part of the nervous system, except that it is more elaborate. Now the position of a physiologist is briefly this. He believes that thought, as known to the ordinary man, depends on the brain.

The brain is part of the nervous system; a nervous system, however simple or however complicated, exists, so far as we have accurate scientific data, for the purpose of correlating the activities of the animal in relation to its environment and for the preservation of the species.

On further examination of all mental activity, he finds good reason to believe that the function of the brain of man, except for being more complicated, acts on the same general principle as the other parts of the nervous system and for a similar purpose.

According to this view "thought" is a response of the nervous system brought about by nervous



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impulses passing along certain pathways determined by the past environment and heredity of the individual.

This process of thought is purely automatic, although we may not be fully conscious of all the factors concerned, and man's conception of Mind is the greatest evidence of his conceit.

All this sounds a little far-fetched. It is quite contrary to what has been passed on to us by ancient philosophers, Greek mythologists, etc., who, together with modern sexologists, rest as a shadow over modern psychology, but I think you will agree, when the evidence is put before you, that this modest conception of man's mental activities is not only justifiable, but is the basis of much of our existing social system. It makes it possible to understand ourselves and, still more, our fellow creatures, of whom we have possibly less exalted ideas.

Our first consideration is therefore—*Does the mind depend on the existence of the brain?* Let me first put the question—Is the mind of a lunatic normal? I think you will all agree that the mind of a lunatic—say, the mind of a man who considers that he is Alfred the Great, or the mind of a woman who considers that she is the Queen of Sheba—is abnormal. Now it is undoubted fact that such conditions may be brought about by the action of disease which destroys parts of the brain. If the mind does not depend on the brain, then clearly such disease could not affect the mind as the result of affecting the brain. The same may be said regarding the action of alcohol or the effect of life at high altitudes, both of which result in profound alterations in the mind.

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I begin, therefore, as a physiologist, with what I believe to be a fact, that the mind depends upon the brain. Some of you may say that our very knowledge of the existence of a brain, such as the specimen which I now show you, we owe to our minds. I hope if there is any one present who believes this, he will allow me later to convince him to the contrary by permitting me to compress the carotid arteries in his neck so as to demonstrate that his knowledge not only of this brain, but of everything else, including the awareness of his own existence, depends on the blood supply of his own brain. I am satisfied that he will be unable to produce any evidence whatever that, during the period when I compress his neck and brain activity is in abeyance, he is possessed of a mind which bears any relation to this world or to any other. I must, however, warn enthusiasts that they must not attempt any experiment of this kind on themselves, as they might cut off their contact with this world permanently. Fatal experiments of this kind have been recorded.

In Professor Huxley's lecture you have been given an indication of the increasing power of animals to respond to their environment as they become more highly evolved. When we look at the brains of the lower animals we see that in the more lowly forms the major portion of the brain is that part which we call the hind-brain, which in man is more responsible for the control of respiration and circulation. In birds and fishes the regions of the mid-brain and the cerebellum, which we know are responsible for the control of posture and co-ordination, functions very important in these animals, are well developed.

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In mammals the cerebrum, or fore-brain, is better developed, and amongst mammals themselves the surface of the cerebrum becomes relatively larger and larger until we reach man. This increased surface is made possible by the development of an enormous number of convolutions and infoldings of the surface. If the development of the cerebrum be compared with the general response of the animals to a complicated situation, it is seen to be roughly proportional. Thus a hen will attempt to get through a hole through which it can scarcely get its beak—a feat which would not be attempted by a dog, whose cerebrum and power of association is more highly developed.

It is necessary also to look for a moment at the very simplest form of nervous system. In the lowest forms of animals there is no nervous system at all. Certain cells are capable of contraction. Later comes the development of a separate sensory and contractile cell, which are attached together by a nerve process. This is seen in the sea-anemone.

When, however, we reach the level of mobile animals we find the nervous system becomes still more elaborate and the animal becomes segmented. The sensory nerves and their parent cells sink further from the surface and are grouped together into a clump, which we call a ganglion, from which fibres pass into underlying muscle. There are other nerve fibres which connect together the ganglia of the different segments. Such an arrangement clearly permits of a certain local autonomy with a certain amount of co-ordination between the segments.

When we come to consider the human nervous

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system we see that the general principle on which it is planned is exactly the same. Each part has a certain local control, and its function is primarily for the purpose of procuring food and for the preservation of the species.

### *Human Nervous System.*

When we come to study the nervous system of man we find that, functionally, the nervous system is not difficult to understand, as anatomical diagrams would lead us to suppose. The nervous system of man consists of a fore-brain, a mid-brain and a hind-brain which is continuous with the spinal cord. From this brain and spinal cord nerves carry messages out and nerves carry messages in. The whole arrangement has been most aptly compared with a telephone system, where the nerve fibres correspond to wires and the brain and spinal cord correspond to exchanges. This does indicate in a very real way the function of a nervous system, for we see that not only complete interchange but also complete local control.

In the first instance there is a local nervous control of the blood vessels of the skin. If the skin is irritated it becomes red. This we call an *axon reflex*, since it depends on the nerve supply to the skin being intact: it does not occur if the nerves have degenerated.

When we consider the spinal cord, we find that each segment has an automatic control over the area it supplies. The response of the leg, for example, to a painful stimulus is an example of such

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automatic action. To such activity we give the name *spinal reflex*, since it involves only the spinal cord. We know, for example, that the movement will still be made if the individual is asleep. We find also that in certain diseases the pathway from the brain to the particular segment may be destroyed. The individual may be quite unable to move the limbs voluntarily, but a reflex response, such as a withdrawal from a pin-prick, may still be given.

If the limb is stimulated severely the other segments come into play and cause a more extensive movement, *e.g.* a jump, and if the individual is asleep the stimulus may reach the brain and cause the sleeper to awake.

On the other hand, if the nerves to or from the spinal cord or the spinal segment concerned are injured, there is a loss of such reflex movement.

In the maintenance of *posture* we have evidence of still more elaborate co-ordination at a higher level. Whenever the position of the body is changed, it automatically adjusts itself to its new position and so maintains its equilibrium. We know that this action depends on the correlation of impulses which pass out from our muscles, which pass in from the otolithic cavities in the internal ear and from the eyes. This correlation is quite automatic and quite independent of consciousness.

We have, you will observe, dealt with the nervous system as far up as the mid-brain.

The next more elaborate reflex responses are those involving still higher mechanisms.

The stimulus is received, it is brought into relation

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with the experience of past stimuli, its significance is determined and a response given. At first it is what we call an act of the will, but later the response is given without any conscious effort at all.

This is the *conditioned reflex* which was first shown under exactly controlled conditions by Pavlov. He found that if each time a dog was fed a bell was rung, eventually it began to secrete saliva when the bell was rung, although the food was not produced.

It is now realized that this indicates a very fundamental process, and that what we call habits are formed by a similar process. We are inclined to forget how much of our daily activity is made up of habit of movement. Where we put our daily 'bus ticket—the way we hold our knife and fork—have all been thought out, but eventually, as a result of repetition, they have become reflex. Our walking automatically may be taken as another example.

Now you will agree that the response gives information regarding the nature of the stimulus or training in the formation of the reflex. If a horse prefers to go a certain direction we presume it has certain associations with that direction. Innumerable examples could be given. I mention the fact, however, since the analysis of such movement is an analogous procedure to what we know as psycho-analysis.

Further, it has been possible to show that certain parts of the brain are definitely related to certain activities, and we can indeed now allot a function to a very large amount of the brain surface. Thus in the occipital regions is the region for the perception of light, in the parietal region the

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general sensation, and in the temporal region we appreciate sounds. This region is of special interest as it is not infrequently the seat of abscess extending from the ear, and gives rise to symptoms which indicate the extent to which localized regions may be responsible for details of hearing. For example, according to Kinnier Wilson, the first temporal convolution is associated with the power of naming objects. The ascending frontal convolution of the frontal lobe we know definitely is concerned with voluntary movement, a small area is devoted to the movement of each part of the body.

I have thought it necessary to give all this information to indicate to you the extent to which we have exact information regarding the automatic activities of the nervous system.

### *Speech.*

There is one movement which is of special interest—namely, vocal speech. Speech is a movement which involves the action of the muscles of respiration, of the larynx and of the mouth. It may, as you know, under certain circumstances, be replaced by movements of other parts of the body, such as a nod of the head. We call it a voluntary act.

At the same time we are also agreed, I think, that speech may not infrequently be quite involuntary. Certain individuals may respond to certain stimuli by swearing. It is common parlance that a man may speak without thinking. We even find Shakespeare causing Polonius to give advice to his son:—

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Give thy thoughts no tongue,  
Nor any unproportioned thought his act.

In the pathological state of aphasia, it is not infrequently found that the individual may be quite unable to answer a question, yet he may still swear when stimulated or repeat poetry which, as we say, he has "learnt by heart." Or he may be able to say such words as he might say automatically.

We see, then, that there is evidence that certain speech at least may be quite automatic—and that such speech may be produced in a way which is strictly analogous to the formation of a conditioned reflex.

By repetition speech becomes fixed. Now we know that repetition is of enormous importance in relation to nervous activity. Each time a stimulus passes along a path it facilitates a subsequent passage of a similar stimulus. We know quite definitely from our studies at lower levels that this facilitation occurs at the synapse, *i.e.* the junction between one nerve unit and another, where there is some sort of variable resistance. By such repetition we believe paths become laid down in the nervous system. We are familiar with the importance of repetition in teaching and learning.

Now suppose we begin to analyse rapid speech as a movement, we agree that we can in this way arrive at the original stimulus. This is the essence of the value of rapid examination in the witness box. The witness, we say, gives himself away. What does he give away? He gives an insight, as we say, into his mind, he indicates the habitual paths of previous stimuli.

But suppose that we ourselves are about to make



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a hasty reply. The speech is on the tip of the tongue when we receive another stimulus, we see someone perhaps. Where is the speech? It remains in our thoughts. We imagine the result of our saying it and compare it with past memories as if we had heard the speech. We have formed *a cycle of thought*.

Such cycles of thought are exactly like any other habit, in that they establish definite pathways. This is the essence of Couéism, in which, by repeated speech, an attempt is made to make a cycle of thought, and it is the recognized function of psychotherapeutics to break such cycles when they are abnormal.

It is generally agreed that there is such a thing as a habit of thought. Systems of memory training, such as Pelmanism, have for their basis the establishment of groups of words or ideas, so that the mention of one word will automatically call up others of the group. Do we not often say that whenever we think of one thing we think something else, or we say when we are telling stories—"that reminds me of one."

When we come to think of it, our whole education system and system of appointments depends on the existence of habitual thought. We presume that students will absorb some of the attributes of their teachers and fellow-students. When a man is appointed to a post we presume he will at least repeat previous performances and will act according to his previous record. We say a school produces a certain kind of boy.

As teachers, we hope that our teaching will bear some fruit. Educationalists stress this plasticity or

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power of man to lay down a vast number of paths at all stages in his life, but especially when young.

In short, we presume that a man educated in a certain way, or subjected to certain stimuli, will, under certain circumstances, respond when stimulated—respond in a certain way. The extent to which our whole social fabric depends on this elementary fact makes very interesting contemplation.

Here comes the first difficulty. Although to some extent he does, he does not necessarily do so. The difficulty, however, is more apparent than real, and depends on the personality of the individual.

### *Personality.*

We say a man shows his personality when he does not respond like his neighbours to a given stimulus. When we examine, however, what we really mean, it is in no wise contrary to our physiological conception of how the brain works.

We are distinguishable, individually, in virtue of the fact that our faces are all different. This difference, we are agreed, depends on heredity. Families, we know, have often distinct facial resemblance. In the case of animals and plants, it may readily be shown that there are many physical characteristics which may be inherited, and it has been possible to formulate very definite laws of heredity.

Just as we inherit the individual configuration of the outside of our heads, so also we must be considered to inherit a certain amount of the physical arrangement of our brains which are inside our heads. So far as I am aware, no philosopher or psychologist

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who does not believe in the dependence of the mind upon the existence of the brain has ever yet succeeded in making any attempt to explain how different types of mind may be inherited. Just as the inheritance of a certain formation of a joint may determine that an individual may inherit the gait of an ancestor, so also the physical structure of the brain, the existence of certain pathways, determines that we have specific mental responses or, as we said, the characteristics of our ancestors.

But personality is still more. Each of us has been different in so far as each has been subjected to different environment, that is to different stimuli during our actual lifetime. Each of these stimuli has left its mark, although we may not have been wholly conscious of having received such stimuli. As some of you are no doubt aware, particular stress is laid upon this point in psychotherapy and in education.

The physiologist, then, sees in personality the result of a lifetime of stimulation acting upon an inherited nervous system. Genius or special aptitude is but an exaggeration of such inheritance. In this category, also, come the instincts which presumably depend on a similar inheritance of nervous pathways. Just as physical characteristics, which adapt the animal to its environment, have become evolved, so also have nervous pathways upon which depend the function required for a similar environment. One may add that the existence of inherited aptitudes in all of us is gradually beginning to receive scientific recognition in industry in so far that mental tests have been elaborated which make it

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possible to determine the suitability of an individual for certain occupations.

In the present connection it is important to observe the similarity of mental and physical aptitudes. Practically they are inseparable and both contribute almost equally to the making up of a suitability to a certain environment.

What, however, I want to emphasize is that our response to stimuli, whatever our personality, may still be looked upon as being purely automatic, although it may be quite distinctive.

Now we may be prepared to agree so far, but no further. What worries most of us is the suggestion that when I say "I think," or when I say "I have thought over the matter and I have come to the conclusion that," I am merely giving an automatic response. We must not forget, however, that in our more modest moments we not infrequently admit that our response has been automatic; we say we have been "led to believe"; if we want to be more modest we say that we have been "forced by the evidence to believe" that a certain thing is the case.

Now I do not mean to suggest that we do not think, but merely that we have a too exalted idea of what the term "thinking" means. We actually give the term "thought" to a response of the nervous system when the nature of the response is such that we may not ourselves be fully conscious of all the stimuli which have been concerned. We all receive stimuli of which we are not wholly conscious. We say we cannot describe so-and-so, but we would know him if we saw him again. That is a simple example, but many more could be taken.

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Further, although we flatter ourselves that our own thought is somehow very profound, we frequently observe that our friends are biassed in their opinion by certain stimuli which they have received. We say, "I wonder what has put that into his head." Do we not say, also: "A man is known by his friends," or that "blood is thicker than water?" We say that a man acts as the result of his having been in a certain environment; we commonly speak of the "spoilt child" who shows traces of his spoiling all through his life. Yet such an individual would most hotly resent the suggestion that his thoughts were influenced by such early circumstance. We are, in fact, quite willing to believe that the minds of our friends are more automatic than our own. The stimuli received in childhood, we know, play the greatest influence in after conduct, and we know that certain religious bodies state that if they have a child up to the age of seven, its after-training is of subsidiary importance.

It has been said that the child is father of the man. If we look upon an adult merely as a child who has received more stimuli, and who has possibly developed more hereditary paths,<sup>1</sup> life generally becomes very much simpler. I know, for example, that I have not the slightest chance of getting the support of professional psychologists and philosophers who have been steeped in classical lore and received stimuli from such sources for a large number of years. I shall, on the other hand, I believe, carry

<sup>1</sup> In this relation it is important to remember, as pointed out by Sir Arthur Keith, that the most important requirements for academic success are those of a good housewife.

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with me those who have had any training in natural science, and it is my hope that those who have not studied either may be influenced by the stimulus which I now give.

Unfortunately the average person has been educated under a system of vested educational interests, which has ordained that a man may be deemed educated although he is in total ignorance of the nature of the natural phenomena around him.

This conception of what really occurs when I say "I think" brings the brain into line with the other parts of the nervous system. The general principle on which it works is essentially the same. It is an organ which correlates stimuli past and present, and brings about an adequate response to environment.

It is still more fascinating to consider that infinitely the most important function of nervous systems, including the brain of man, is exactly the same as that of a worm, namely, it co-ordinates the function of a body for the purpose of the supply of food and the preservation of the species. We are inclined to forget this fact because we can, in a civilized community, arrange to get someone else to provide us with food in exchange (theoretically, at least) for our own labours. In the recent General Strike, however, we realized that a position might easily arise in which our whole nervous system might become directed to its primitive function, to our food supply. It is still more intriguing to point out, as has been done by McKerrow, that when we get the food we do exactly the same thing with it as does a worm, *i.e.* we get outside it.

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From the aspect of pharmacology we have further evidence that the principle on which the brain works is like that of the rest of the nervous system. Bromides, for example, slow down the spinal reflexes and slow down mental activities. Strychnine in small doses has an exactly opposite effect on the synapses between the neurones. Similarly, when there is a deficiency in the activity of the thyroid gland, there is a sluggishness in all the lower nervous activities and also in mental response to stimuli. If asked a question such an individual may take practically no heed or replies very slowly. The sluggish mentality of those whose thyroid is deficient must be accounted to be due to the slowing of the oxidative processes in the brain as elsewhere in the body. In the case of cretins, *i.e.* children whose thyroids are deficient, the mind may remain completely undeveloped and the individual remain an idiot. All such individuals rapidly become normal persons by the administration of thyroid extract, which we know increases oxidation generally throughout the body. Children who otherwise would be idiots, become useful members of society, simply because of increased oxidation they become capable of forming higher associations which would otherwise be impossible. Many other examples could be taken.

It seems to me also that such a physiological conception of mind is the only one which bears any relation to such practical things of this world.

It is impossible to discuss here in any detail how all the various phenomena which are considered to be activities of the mind are to be explained on a

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physiological basis. I shall, however, endeavour shortly to discuss one or two of the main points which offer difficulty.

*The reader is earnestly requested to consider the following in the spirit in which it is written, that is not necessarily in accordance with his previous training but in relation to what has been said above, and endeavouring to see how far the physiological conception may be carried.*

### *Voluntary Movement.*

This term is ordinarily applied to movements which we make without coercion, but when we look more carefully into the matter, it readily becomes evident that such a movement is "voluntary" in a purely arbitrary sense. If we look at the subject from the point of view of what has been said, we realize that such action is only voluntary in so far as we do not at first sight recognize all the stimuli which have produced it. It must be realized, too, that the stimulus need not be recent. For example, you say that you came to this lecture voluntarily. But if I ask you why you came you can give me a reason. You say you were interested; I ask you how you came to be interested, and you again can give me a reason, which, from the physiological point of view, is the main stimulus concerned. To this stimulus is added that which reached you to the effect that the lecture was to-night. In some instances the reason why you came—or rather the stimulus which brought you—will be more apparent to your friends than to yourself. We constantly can see the cause of voluntary action in others.



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The effect of any given stimulus depends on our habit of mind, which, in turn, depends on previous stimuli and our heredity. Our ordinary habit of mind is, however, to consider only very recent events as stimuli, while, in reality, we may ignore the more important earlier stimuli.

By doing so we appear to ourselves to be more independent and superior beings, but it will be generally admitted that a man's conceit regarding his capabilities may bear a strange relation to facts. The strutting of the peacock suggests, however, that such conceit of superiority is not confined to man.

### *Attention.*

Here the stimulus is more immediate. The successful lecturer should, we say, hold an audience, which, however, he cannot do unless he is talking on a subject in language which his audience can understand. He can only do so if he can fit in new facts with their existing mental paths. The stimulus may, however, not be the lecturer but an impending examination. When I ask you to give your attention to a diagram, I set a-going a certain part of your brain. If there is a noise our attention is diverted—that is, another part of our brain is thrown into operation at the expense of the former. A striking instance of this automatic response to a sudden sound is seen in the contraction of the tensor tympani muscle, which contracts at once to make hearing more sensitive. In view of the relatively fixed volume of the brain, in virtue of the fact that it is in a rigid case, it seems not improbable that this

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limitation of attention depends on limitations of blood supply. If increased activity occurs, and the metabolites formed cause a dilatation of blood vessels locally, this can only occur if the blood in other parts of the brain are reduced. This we know occurs in other parts of the body. We know, for example, that if we use our muscles, our alimentary canal is shut down to an approximately corresponding extent. We know how difficult it is to concentrate if we sit down in an arm-chair by the fire after dinner, that is, when conditions tend to reduce the blood supply to the brain. We know also that localized mental activity, like localized muscular activity, is much more fatiguing than more generalized work.

The production of a visual image in an automatic attempt to analyse a sound is a closely related phenomenon. If the stimulus from the lecturer is poor, you analyse all the extraneous sounds you hear; if the stimulus is sufficient, these sounds have less effect, although, if you heard the cry of "Fire!" that sound would take preference.

### *Originality and Deduction.*

One of the greatest stumbling blocks to a large number of people is the difficulty in accepting any mechanical conception of what is ordinarily known as originality or deduction. How can we possibly consider the making of a new design of a building or the painting of a picture automatic acts of the brain? They are automatic acts in so far as they bear some definite relation to the previous experience

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of the individual. The individual has trained himself in a certain way; subjected himself to certain stimuli, and, when he is further stimulated, he responds with some definite relation to the earlier stimulation. In deduction, there is, as it were, an adding of the immediate stimulus to the effect produced by previous stimuli; and the result is what we call the creation of a new idea. But if we ask the author the source of his inspiration, as a rule he is quite able to tell us, if indeed we cannot see it for ourselves. Or the contrary may occur, he may be unaware, yet we may see the source of the earlier stimuli. We generally recognize the influence of the great masters and of certain schools of art or of scientific thought.

The same occurs in relation to visual images. If I stimulate you by asking you to think of John Bull, you do not think of a tall, thin man; you think of him as you have seen him portrayed, that is, as you have previously been stimulated. My stimulus has set going in a part of your brain certain chains of neurones which were set going when your eye was stimulated by the conventional picture of John Bull. As the result of the activity of this chain of neurones you become conscious of a visual image.

Now I do not pretend to know how these stimuli are added together. Many attempts have been made by the Behaviourist school of psychology in America to draw diagrams of how this may occur. I do not know that such largely theoretical diagrams serve much useful purpose. *I do know that such addition can take place automatically* in the nervous system. When I move my arm I have scientific

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evidence that the co-ordination required has necessitated the addition of a large number of stimuli in the cerebellum.

The fact is, we see the stimuli and we see the response, which may readily be explained as the result of the addition of such stimuli, we do know that the destruction of certain parts of the brain makes such an addition impossible. We do not know definitely how this addition or association of ideas takes place; but it would be absurd to say that it does not take place. We might as well say that we do not believe in wireless telegraphy because we have not the vaguest conception of the nature of the medium which is responsible for the transmission of the waves from the transmitter to the receiver. We do know that in the brain there are some ninety hundred million odd cells which may be connected together in an infinite number of ways and which are quite capable of carrying out this function. Actually, we know that an area in the mid-brain does bring about the addition of impulses from eye, the ear and the muscles which result in the maintenance of our equilibrium, but we do not know how this occurs.

### *Consciousness and the Higher Psychical Activities.*

In the physiological conception of the mind put forward, no special attention is paid to consciousness, which for some psychologists and psychotherapists is so important that it may be considered the starting point of their studies. At the same time it is evident that, for an adequate response to environment, the

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oxidative processes, upon which consciousness depends, are necessary. As indicated above, it is proved beyond all shadow of doubt that consciousness does depend on the oxygen supply of the brain.

It does not appear to be realized that the definition of the term "consciousness" is purely arbitrary, and must be taken as the state in which we are aware of external stimuli of a certain intensity. In some forms of unconsciousness, *e.g.* Sleep, the individual may be roused to consciousness by adequate stimulation. On the other hand, when we dream we are as conscious of what we see as if it actually existed. We may experience intense fear and may give vasomotor reactions which may cause cerebral hæmorrhage. Such consciousness is limited, but there is no reason to believe that it is in any way different from what we popularly know as consciousness except in its limitations. When certain pathways through the cerebrum, normally thrown into activity when the retina of the eye is stimulated, are thrown into activity by stimuli reaching them from other sources, we experience a visual image of the object which previously brought such pathways into operation. In the waking state the stimulus, such as a word, *e.g.* John Bull, is evident, but in the sleeping state the source is not so clear, although we know that in certain individuals a source may be the alimentary canal. Certain articles of diet are notorious in this respect.

It does not seem likely that the function of consciousness which is common certainly to all higher animals, if not all animals, has any special

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significance, except in so far as it provides man with an exalted sense of his own importance. There seems little doubt that speech has been infinitely more important to the development of the higher ideation ; indeed, it has more recently been shown by Head that physical states, such as injury of the brain, which interfere with speech, also interfere greatly with ideation.

This power of ideation, or the power of forming complex associations, is so strikingly developed in man that their formation may, in itself, become an end, and may influence behaviour accordingly. It may also be added that in such individuals the power of responding adequately to environment along conventional lines may become correspondingly reduced, presumably since the stimuli of ordinary life fail to arouse a response. At the same time it will be agreed that philosophers may be reasonably normal members of society, since the cultivation of such abstract ideation has by ancient convention a value monetary or otherwise and may be undertaken as a result of the stimulating necessity of making a livelihood. The value may, however, only appear to the individual concerned. Those of us who are familiar with mental ailments realize that many of the insane are merely those whose ideation has become incompatible with society.

The development of such abstract mental activities cannot, as yet, be shown to depend on definite anatomical paths, but it would be futile to assume, as is so often done, that no such path exists since we know that all forms of ideation may be profoundly altered by brain injury. We must not assume that

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our conscious mental life has no physical basis. No one would suggest that many of the complex reflexes do not depend on physical pathways simply because we have not as yet the means of demonstrating these pathways, except in a very crude way. We have never actually seen a synapse,<sup>1</sup> nor do we know its nature, but we have very definite evidence that such a thing exists.

It may also be added that, as would be expected from any limited system, there is considerable evidence of *limitation to mental capacity*, which is seen if one form of activity is pursued excessively. In science we are familiar with the narrow view of the specialist. This may readily be explained by the fact that if a large number of paths or groups of paths become used for a certain purpose, then there are fewer available for other purposes. Darwin in his later years deplored the fact that he had lost his taste for the arts which had previously attracted him. We commonly say "out of sight, out of mind." No doubt when we "keep up" a study or an acquaintanceship we keep certain synapses in certain pathways in a state of diminished resistance which would become increased by lack of use. Of course, when we say *we* keep, we mean really that the keeping up is the result of stimuli which we have received, and which we associate with certain other past stimuli. If indeed we are asked why we study a certain subject we can give

<sup>1</sup> The synapse is the name given to the junction between one neurone or nerve unit and another. It has been shown by Sherington to offer a definite but variable resistance to the passage of a nervous impulse.

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the reason, that is, the stimulus. To say that we may voluntarily neglect such a stimulus is merely to admit that we may respond to a stimulus of another kind.

A physical analogy of the general conception of such pathways is gleaned by drawing one's fingers many times through a box of small pins. The first main furrow we may make may apparently become obliterated, but if we studied each pin separately we should certainly find that the position of certain pins relative to the others still bore signs of the influence of the first stroke. If the majority of the strokes were approximately in a given direction the pins would develop a general trend in that certain direction. When we consider the uncountable combinations and permutations of the millions of cells which may be connected together in certain ways in the cerebrum and consider the possibility that a synapse between any two individual cells has its resistance altered, we begin to realize the possibility of a physical basis of mental processes.

It does not appear to be generally realized outside physiology that the power of a stimulus to spread within the nervous system is infinite in view of the fact that a nervous impulse once started is self-propagating. Graded synaptic resistance must play an enormous part in determining the limitations and directions of nervous impulses. It certainly seems that it is along this line that the elucidation of many such problems will occur. It is suggested, for example, that alcohol which reduces our relatively recently evolved self-consciousness, etc., does so by paralysing the pathways of the higher associations,



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which have already a higher resistance and are more readily affected than those of a lower order.

### *Religion and Ideals.*

Although it has been the function of the physiologist to deal with the more material aspect of the subject, I do not want any to go away with the idea that this material conception of the working of the brain is in any way contrary to the holding of religious belief ; on the contrary, it indicates that a man wandering about in a natural world and having impressed upon him Law and Order in nature from his knowledge of his own affairs, where he knows Law and Order are dependent on human activity, must be driven to a conception of a guiding and supreme power. This conception is reinforced by the stimulus of history as set forward in the New Testament and its relation to the teaching of earlier writers.

Many of our non-scientific friends appear to imagine that the holding of such a material view of the mind is quite discordant with the holding of our most cherished ideals. From the point of view of science there is no incompatibility whatever. A life of service may still be preferred to a life of gain, the music of the poets still is music and love loses nothing of its beauty. Physiology does not deny these things; indeed, but for some of them physiological science could not have been brought into being and have been maintained. It teaches, however, that many of our ideals must have been laid down in our nervous systems on definite principles and according to cer-

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tain natural laws. And what is more important in an ever-increasingly material world, which demands our cerebration in a very real material sense and usurps our mentality, is that such ideals cannot be maintained unless time and opportunity are available for their cultivation. Further it emphasizes that those who feel themselves possessed of such good qualities which they see lacking in others are in duty bound to radiate such stimuli as will cause an adequate response in others, otherwise they cannot be considered to be really possessed of such ideals and are in part to blame for the deficiencies of their neighbours.

By this conception of mind our more idealist world is brought into direct relation with our practical world. We must not forget that it is absolutely impossible for us to get out of dependence on our environment however much we may desire. Our higher ideation may succeed in influencing the effect on our nervous system, but we are still dependent on our environment for our air, our food, for everything we become aware of by the senses. Our very existence depends on these things and no degree of exaltation of ideas can get rid of the fact.

Surely then there is every reason why we should bring our minds and ideals into direct relation to material things. It may, indeed, with some justification be said that it is only when our minds come into direct relation with practical affairs and that our most exalted thoughts take effect in deeds that we fulfil our destiny.

Man still remains supreme among the animals because he is possessed of a nervous system which

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can form associations much beyond those of the lower animals. We have good reason to believe that he has incurred certain moral obligations as a result of this power.

Man is a creature of his environment and of his ancestry. He is a creature of his environment in so far as his whole body may be influenced by the stimulus which he receives, but he becomes master of his environment in virtue of the power of his nervous system to respond according to the structure of brain he has inherited and according to the stimuli which he has received from some earlier environment.

To this complicated response of his nervous system he gives the name of thought. To indicate this function of his brain and for purposes of more abstract thought and mental gymnastics, he uses the term mind which, as I have said, is the greatest evidence of that very primitive animal attribute—his conceit.

*Postscript.*—Although editor of the series, the writer has not the right of reply to the lectures which follow, at least in this volume. He can but say how much he is impressed by the unconscious support which has been given to the physiological conception. Again he draws attention to the italics on page 67. It has been said that the physiologist does not use a net which will catch the mind. Be that as it may, but we must not forget that with that very net we necessarily must catch these material things upon which depends our material existence.

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By F. A. F. AVELING, M.C., Ph.D., D.Sc., Reader  
in Psychology, King's College, University of London.

VIEWS as to the mind, human or animal—what it is and what it does—taken by representatives of the different sciences differ greatly, as this course of lectures will show. Indeed, even psychologists, though it is their especial province to deal with mind (or consciousness), have been, and are, largely in disagreement as to what precisely is meant by the term, and what it really implies.

Thus there are those who hold that the mind, or soul, is a thing in its own right, distinct from, and relatively independent of, the body—an entity which acts upon the body (as, for instance, when it wills), and in turn is acted upon by the body (as when it receives impressions from the outer world through the channels of the senses, and by the intermediary of the brain and nervous system). This is the Interactionist view.

There are others who maintain that, while mind and body are still to be looked upon as two separate entities, no such interaction takes place between them. Each runs its own course, characterized by distinct series of events: though those courses lie on exactly

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Here are some who hold that there are no bodies  
ever to act or interact; and that mind alone is

And yet another group of thinkers teach that mind is a sort of by-product—and a useless by-product at that—of bodily processes; that matters would go on just as well if there were no such thing as “being conscious” at all; indeed, that all the behaviour we can observe in living organisms (including our own) can be perfectly well explained in terms of physiological, and, in particular, of nervous process; and thus ultimately will have its final explanation in terms of chemistry and physics. This view is known as Epiphenomenalism. For the more extravagant of those who hold it, what we know as thoughts and pleasure and desires and the like are in reality no more than “movements of particles or of currents of (physical) energy in the world about us.”

There are, to be sure, other views; and there are varieties and modifications of those so briefly outlined here; but, in the main, all the opinions can be reduced to these.

Now, it is the business of the psychologist, if it is anybody's business, to begin, not with views or theories such as those instanced, but with facts—indisputable facts of conscious experience. One may doubt a theory of which there is, and can be, no immediate evidence. There can be no doubt of a fact apprehended with insight; and facts of consciousness, whatever their nature may be, are of this

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a pain, or a wish, cannot be doubted as an occurrence. It can be held that we have no acquaintance with real things as they exist in a real extra-thought world; that they are only (what they certainly are for us) phenomena or appearances in our knowledge. Indeed, it must be held that, as far as physical existents at least are concerned, they have no sense or relevance for us except in so far as they are known in some way.

The primordial fact, then, seems to be "knowing"—together, of course, with "feeling" and "willing."

Our task, therefore, in this lecture, is to reach a notion or concept of the mind (human or animal) from the fact of "knowing," and its characteristics as given in experience. We shall take nothing for granted, except what must be granted. The task, consequently, will not be an easy one; since we must, at least provisionally, jettison much of that which passes current as established fact, and go to the very roots of the matter. For example, we shall not be able to take for granted a brain and nervous system as accounting for, or explaining, our knowing; since brain and nervous system only exist, for us, in so far as they are known—in so far, that is, as they are mental objects and not physical ones. We shall thus have to disentangle our beliefs from our insightful knowledge.

It may thus appear that what follows is philosophy rather than science. But this is not so. It is science, and the psychological groundwork of all science, with which we shall be occupied. And that is what makes the very limited point to which we shall be

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restricted in this lecture—the determination of what mind is by the way it works—so difficult.

A great thinker has said that the minds of animals differ from ours as their bodies do. And that belief, I take it, is one in which most people share. We attribute minds, in all respects similar to our own, to those creatures whose bodies are precisely similar to ours. Thus, overlooking all slight individual peculiarities, we group all human beings into a single class, give them all a common name, and consider them to form the species *Homo sapiens* within the genus *animal*. This, on our part, is a logical performance, part of a device by which we classify our experiences, and so achieve economy in our thought.

But our logic goes further back than this. According to the degree in which our innate curiosity becomes a scientific passion, we search for and discover finer shades of difference and similarity within our experiences, and classify the objects showing them accordingly. Thus it comes about that the first steps in science are taken, and the ground prepared for causal explanation. First of all, in a rough way, we distinguish between inanimate and living nature. Then we separate, by a precisely similar procedure, plants from animals within the realm of life. And, always making the net of our distinctions finer and finer, we divide within—say—the animal kingdom classes and orders and genera and species until we come back to the individual experiences from which the whole related structure of our knowledge was evolved.

But, just as we analyse our experience thus—

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spurred to it by an insistent instinct of our nature—so we seem driven to synthesize again, to put together what we have taken apart, or to hold together, even while we analyse, the items of our experience. And this we do in virtue of principles of explanation which we find, just as we find the items to be explained, within experience itself.

Accordingly, we interpret all the beings of the real world—which we believe to exist independently of our thought of them—as if they, in a greater or a less degree, were like ourselves; and, in particular, we interpret members of the animal kingdom—increasingly so as we ascend the scale of life—as very like ourselves, on account of the great similarities of structure and of behaviour which they seem to share with us. But structure and behaviour, as far as they enter into our experience, are bodily things, not mental. We can have no direct access to the minds of animals—nor, for the matter of that, can any one of us have access to the mind of any other human being. No mind other than each individual's own is open to his inspection. Accordingly, since we desire a fuller explanation of organic structure and apparently purposive behaviour than those we apply to inanimate things, we credit animals, and other human beings, with minds in an ascending scale of perfection, and assent generally to the axiom of Spinoza which I have just quoted. I say assent “generally” because not every one has admitted that animals other than men have minds. Not every one admits it now. There are some whose explanations of their behaviour have been limited to the principles of mechanics.



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Nevertheless, however we explain the structure and the activities of animals, from the lowest to the highest without exception—whether by postulating mechanical principles only as sufficient, or by supposing that they have minds in some way similar to our own—we reach either our mechanical principles or our minds by inference from those items of our experience which we call animal bodies, and by making use of analogy. Each one of us argues—though no doubt the argument is only an implicit one, the conclusion of which, as we shall see, is really the product of a psychological process rather than that of explicitly logical reasoning—each one of us argues that as his own body is to his own mind so the bodies given as items of experience are to other minds whether animal or human. This, as I understand it, is the spontaneous way in which we, quite unconscious of argument or of construction, draw conclusions. But when we come to review the naïve belief which we have, certain very real difficulties at once spring to view. First of all, when we reflect, we find that all the bodies of the external world in which we believe, including, of course, those bodies which we look upon as in some way connected with minds, are, so far as each one of us is concerned, only objects of his own thought. Whether, or what, such objects may be when I am not thinking them is an utter enigma to me. It is quite certain, no doubt, that I do think such objects, and that I think them also as real bodies existing in real space and time quite independently of any thought of my own. But that is not the point. The point is that I believe in the existence of other minds because of

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certain phenomena of other bodies. And those phenomena, so far as I have any acquaintance with them, are part of my own personal, peculiar and incommunicable experience. So far as I am concerned, they are *my knowledge*—and nothing else.

A second difficulty, when we begin carefully to look into the matter, lies in this; that my own body (by analogy with which, in its relation to my own mind, I conclude in the existence of other minds from other bodies) is itself also an object of my thought. Like all other bodies, though in a very peculiar way set apart from them all in experience, my body is part of my experience. Like them, whether or what it may be when I am not thinking it, is an enigma. Nevertheless, I am quite certain that I *do* think it, and that I think it as a real body among other bodies in a real world, though related to my mind in a way in which nothing else is related. But, again, that is not the point. The point here is that this body, together with its relation to my mind, exists for me as an item of my own personal, peculiar and incommunicable experience. So far as I am concerned, it and the relation are *my knowledge*—and nothing else.

Accordingly, the primary, the fundamental task of Psychology is not to build up a science of "The Mind," in the sense in which Physiology, for example, builds up a science of the functions of "The Body." Nor is it to trace out the links in the chain of evolution by which the human mind is bound to the beginnings of consciousness—or, better, sciousness—in lowly organisms, as Biology

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traces out the links in the organic chain of life. These problems, and many others, may and indeed must come later. But *the problem* of Psychology, first and foremost, is to examine and to give some account of known experience within itself, making use of no postulates other than those which can be founded on and justified in experience. *The method* of Psychology is, in the first place, introspection pure and simple. It must not transcend experience. It is only when, by introspection, we have been able to account for our knowledge of bodies that we may be able to pass on to give some further account of minds. *The subject matter* of Psychology is for you your known experience, and for me mine. And the initial standpoint to be taken up is, and must be, an entirely and uniquely personal one. This is an objection often made against Psychology—that science cannot be of one individual. But this is the initial stage, not the final one, of the science.

When it is considered how every other science, occupying itself with objects in nature real or ideal, from whatever standpoint it studies them, *as if* they were independent of a uniquely personal experience, is grounded upon the fact of knowledge and involves the psychological laws of knowledge, it will be realized how extremely important is this fundamental question which Psychology has to treat. Moreover, it will be realized that to attempt to explain mind, taken provisionally, as I am now taking it, in the vague sense of knowledge, by body—brain and central nervous system, for example—as by something independent of mind, is to attempt to explain, or account for, mind by something utterly unknown

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and utterly unknowable, except so far as it is a mental, and not a bodily, fact.

All that I have been saying is so remote from our usual, "common-sense" way of thinking that it may appear to be no more than a *tour de force*—a philosophical diversion rather than a sensible statement of a real problem. For most of us believe—indeed, one can say, all of us believe—in the real existence of a plurality of bodies and minds. However we may have become sophisticated by philosophical opinions and by scientific theories, the actual business of our life and living is carried out in the light of that belief. It is at least "common-sense" to hold that there are many minds, or souls, just as there are many bodies; and, further, that there is a problem (which most people best solve in practice by giving little thought to the matter) as to the manner in which mind, or soul, and body are mutually related. On this belief our morals, our religions, our laws, our politics, and the like ultimately depend. It ramifies into every department of our everyday life.

This "common-sense" view, which most of us quite uncritically accept and take for granted, may certainly in the end turn out to be the correct one. But it is not at once so obvious as it appears. Doubtless, at any rate in its main outlines, it is a view we are psychologically constrained to take; by which I mean that there are psychological laws in operation—as I shall hope to show—which account for it. But the main outline of our belief with regard to the existence of bodies and minds is so heavily overladen with masses of detail with regard to their nature—detail which we have incorporated in virtue of the

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strong social, philosophical and religious tradition in which we have been nurtured—that this “common-sense” view, taken as a whole, calls for strict examination and criticism. And criticism leads us, as it has led the greatest philosophers in the history of thought, to the fundamental problem we have stated.

The basic facts upon which all science and all philosophy must build are to be found in Psychology alone, and can be discovered nowhere else. But, as has already been hinted, such facts cannot be found in Psychology as a communicable science. No one can point them out to anyone else, as he might point out what we call an “object in nature.” These facts are in—indeed, they constitute—your private and incommunicable experience and mine. I cannot know your mind directly any more than I can know directly of what you are thinking. Even your behaviour, including your speech, by means of which I interpret your thoughts and feelings and desires on analogy with my own, is peculiarly mine; since it is only as your behaviour is known by me that I can speak of it—or think of it—at all.

Now, this is the standpoint of what is known in Philosophy as Solipsism; and it revolts us precisely because it is so far removed from “common-sense.” It seems a paradox to assert that our truest knowledge is furthest from what we hold to be reality; and we are incapable of living such a paradox or of believing it. But, because we somehow have a world of objects to live in, and a social world of persons like ourselves with whom to consort, it does not follow that Solipsism is not the initial position from

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which we must set out in our philosophy. I certainly believe that you exist and have a mind—that you think and feel, rejoice and grieve, hope and despair, purpose and carry out, as I do. I believe this just as I believe that you have a body—eat and drink, sit and stand and walk, as I; and that your words and mine have similar significance. But I have to take my belief not simply for granted. I must examine it and justify it. I must explain its origin and assign its laws. And all this—belief, examination, explanation and the like—must be peculiarly mine; for it is my own conscious experience, and nothing else, with which I am occupied. This is, and must be, the initial stage of all philosophy and of all science; just as the data of my own immediate experience are the only data I have from which to construct the science of Psychology.

But notice. When I say that I believe you “think and feel, rejoice and grieve, purpose and carry out, as I do,” I am endowing you with something, in my belief, with which I am directly acquainted in my own immediate experience. I am crediting you with conscious experience also. And it is just that conscious experience which I immediately have, and which I believe you also to have, that gives rise to the notion of mind. Vague and unclear though it may be when I extend it to other men and to animals, clearly my notion is derived from my own experience. Accordingly, since conscious experience is involved in the notion of mind in general, we may ask in what way it is so involved.

Minds may be no more than groups—collections—of conscious experiences. This is a view which

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has been largely accepted ; and until lately it was perhaps the most current view in what we may call recent " official " Psychology, the Psychology of the text-books. Or, minds may be things which consciously experience ; which think, will, and the like—permanent possibilities of sensation, so to speak. Or they may be thinking things *plus* their experiences. Or, possibly—if we find some way of transcending personal experience—minds may be aspects, or even functions, of things which are not mental at all.

In speaking throughout of conscious experience, I am, of course, not forgetting the unconscious, which certainly must be taken into account in any examination of the notion of mind. I omit it, however, for the sake of brevity and simplicity. Though, no doubt, the unconscious does enter into the notion, it does not—and evidently cannot—originate that notion. Again, in speaking in this lecture mainly of the human mind, I am not excluding from the concept other minds than human ones. The origin of the notion of any mind, as I have pointed out, is for me—as for you—to be found in the experience of each one of us and, for each of us, there alone.

I have said that the notion of mind has its origin in experience; and, clearly, all the definitions of it that have ever been given connote cognition, or some form of knowing. I use " knowing " rather than " consciousness " in this connection in order to cover the notion of mind in its broadest application; but, as we shall see, " consciousness " is the more appropriate term to use with regard to our own personal experience, since we never know anything fully without being at the same time aware *that we*

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*do know it.* This is an exceedingly ancient observation; and it figures prominently in the most recent and most scientific statement of the principles, or laws, of Psychology which I propose to consider in this paper. But it is a crucial fact which has been entirely left out of view in the account of mind first given above. Groups of conscious experiences—mosaics of impressions and images, associated sensations, and the like—are certainly to be discovered in experience, since we can by abstraction analyse them out of it. But, just as certainly, these do not exhaust experience. The primordial fact is not sensation or image; and the primordial law—highly respectable though it may be—is not the law of association. The fact is, as Descartes stated it, “*I think*”; or, as Augustine pointed out before him, “*I know myself knowing, or doubting, or the like.*” And the law is that “we tend to evoke immediately from any lived experience a knowledge of its character and of the Self.” I have paraphrased this primary law of knowing from Spearman’s formulation of it. The Self, or experiencer, as an immediate experience, is as much a fact as any sensation or image; but, like these, it is an abstract fact, and never experienced in isolation. Moreover, as was noticed by Aquinas, it is never experienced as a *what* but only as a *that*—never as an essence but only as an existent; and even as a *that*, it is experienced only in its acts. The *what*, or essence of the Self, as we shall see, is possessed by us as a notion or concept which we form by reflecting on the character of the several acts of the Self. It is a mental construct which we produce by a process of synthesis.



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All this—or, at least, the fundamental fact of experience—might have been inferred from the use of the term “consciousness” which was a favourite substitute for mind in that presentation of Psychology to which reference is here made. But the term came to mean no more than such experiences as sensations and their fainter copies in the school of Associationism; and the essential character of the fundamental fact—viz., the experiencing Self—was ignored. Even up to the time of William James, who struggled bravely to fit together the tenets of Associationism with the dynamic facts of mind, the Thinker remained the passing Thought, which in some inexplicable and mysterious way surrendered its substance to the one that came from it.

The basic fact, then, of the Psychology which is the private and unique possession of each one of us—of that Psychology which alone makes all science and philosophy possible—is this:—I, conscious of my existence as a knower, know something. And this fact might be expressed and expanded in a variety of ways:—I, always self-conscious, know and will and feel. I know myself knowing; I know myself willing; I know myself feeling; and so on.

It is true that it may be possible for me to know, or to will, or to feel, without knowing that I am doing so. The knowledge that I felt, and so on, may come afterwards. The field of lived experience, in other words, may be wider than the field of knowledge. Subconsciousness, or the unconscious, may be larger in area than consciousness itself. But that is a refinement into which, for the purpose of the present exposition, we need not go. It is necessary

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only, and sufficient for us, here to point to the primordial fact—which everyone may verify for himself—that, in knowing, I know myself knowing. And that fact, which everybody knows, is the reason why the official presentation of the Associationist Psychology has always seemed, and has always indeed been, so unreal, so unconvincing, and so fruitless.

We must come back from consciousness, in the sense of groups of conscious experiences, to mind as an immediately experienced and experiencing reality. And for the moment, we need not do more than this. We need not yet attempt to determine *what* mind is. It is sufficient to show that it is. "*Tu, qui vis te nosse, scis esse te? Scio. Unde scis? Nescio. Simplicem te sentis an multiplicem? Nescio. Moveri te scis? Nescio. Cogitare te scis? Scio.*" (August. Sol. ii. 1.)

But, having thus pointed out that the Thinker, known directly in immediate experience, is, if not more real, at least as real and more fundamental than the thought, we must go back to the thoughts or conscious experiences for our next step in advance. And these thoughts are always things, and aspects and relations of things, objectively present to us.

Besides the persons with whom we enter into moral and social relations, there are other beings which make up the world in which we live. There are the objects with which we believe ourselves to be related in various ways, such as those of space, and time, and causality; and there are the relations which we believe to hold good between those objects themselves. Among all these things, as we know them,

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there is an observable *order*. As known, they are caught in a network of orderly relations; and, whenever any one of them seems to escape from that order, we experience an uneasiness that only becomes dissipated when we discover the previously unseen strand of relation that encloses it in the universal net. This is true of all of us, for even the child and the savage look for principles of order in their several worlds. But it is still more patently true in all scientific matters. Indeed science, as a body of related knowledge, has its main attraction in this—that, as it advances, it increasingly satisfies our craving for orderliness in the world. It brings under fewer and ever fewer principles of explanation its ever increasing body of observed facts. We do not *want* a chaos, but a cosmos in which every element and event is related to every other in one or in many ways. Now, there may be real elements and real events in a real cosmos; or there may not. It may be that the elements and events, as well as their relations, are what they are for us because of the forms and categories of knowledge itself. But it is certain that there is order—and order brought about by relation—among all the objects as known by us.

The notion of order, derived from our insight of related mental objects, was very anciently exploited in philosophy; and the term mind, meaning the divine ordering principle in nature,—the *νοῦς* of Anaxagoras—has, in one guise or another, had as long a history, almost, as any other in the long history of thought. But such a notion—partial as it was in the conception of Anaxagoras—clearly was derived from the personal experience of that

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distinguished philosopher, who, because of that very notion of mind, was likened by Aristotle to a sober man coming among drunkards. For there is *no* immediate awareness of any such principle as an ordering mind in nature, even if that mind be conceived as causal merely in an "efficient" sense. In the mental world of Anaxagoras, as in yours and mine, however, order was to be found. Mental objects were seen with insight to be related; and the relations, of whatever sort—the perceptual relations as well as the so-called logical kind—could be held apart in abstraction from the elements related, and contemplated in themselves. We can as well think, and give a name to, similarity or difference as perceive two musical tones or shades of green as similar or unlike. But more than this, we can actively search for relations; and to some extent we can impose them upon our mental objects. Illustrations are to be found in the interpretation of ink-blots, the duck-rabbit illusion, and others. The mental activity of which we are conscious—the acting Self—is an ordering Self, bringing order into that chaos of relational grounds, that "buzzing, booming confusion" of William James, which theoretically constitutes the first moment of consciousness.

The consciousness of order, secured by relations, within our mental world, together with the immediate apprehension of the Self as ordering (or, for the matter of that, as acting in any way), is enough to account for the notion of ordering cause which we certainly possess. And that notion, as we shall see, is projected upon a world transcendental to conscious experience.

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We apprehend no such thing as a "cause" in the world of objective phenomena. The objects *as known* merely succeed one another in orderly phenomenal sequence; and we read into them (just as we project them themselves into a world believed to be independent of our thought) the relation of causality which we have found only in the immediate experience of our own activity. It cannot be too strongly insisted upon that all our scientific categories—the relations of space and time, as well as those of cause, constitution, attribution, and the like; together with the notions of energy, force, matter, etc.—are apprehended in and educed from the immediate personal experience of each one of us and nowhere else. Hence it would be as absurd to attempt to explain such basic facts of Psychology as awareness of Self and of conscious experience, of order and Self-activity, on the ground of physical causality (or, indeed, on the ground of any relation whatever which we "project" upon an external world), as to attempt to explain the constitution of a man—say—by looking at his photograph, when we have the man himself to study. The notions of physical causality and the rest are to be explained by the immediate experience of causation, and not the experience by the notion; just as the photograph is to be explained—if at all—by the man, and not the man by his photograph.

Nevertheless—I repeat myself—we all do, as a matter of fact, believe in the existence of an external world which is at least very similar to our conceptions of it; and in the relations—temporal, spatial, causal and otherwise—which really obtain between the objects of that world. We believe that

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we are among its objects, bodies related to other bodies; and that our bodies are furnished with nervous systems which in some peculiar way are especially related to our conscious experience. Of this, of course, we have never had any immediate experience; nor, in the circumstances, could we. We could establish no relation between our brain and mind, even if we could take our brains out and handle them. As it is, our brains for us are mental constructs, as far as our consciousness is concerned, not even on a par with the brains of other people which at least may be given in experience as visual or tactile mental objects.

But our belief has its psychological laws, none the less; and it is because these have been working long before we ever began to reflect upon our experience that we are already in presence of the transcendental objects of knowledge without having any knowledge as to how we came by them. This process is due to a third law which will be explained in a subsequent paragraph. But the present paragraph would not be complete without a further consideration. The *νοῦς* of Anaxagoras—the ordering mind—which I have attempted to show to be a projected reification of personal experience, was conceived on the pattern of efficient causality alone. Now, though this may be an item of immediate experience, it is, I think, never experienced in isolation, but always as related to conscious *purpose*. This point both Plato and Aristotle saw.

I need make no apology for introducing cosmological doctrine into a paper on Psychology, since I have abundantly stressed the fact that all our notions

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applied to the real—"projected"—world are derived from immediate conscious experience. The cosmological doctrine of final causes operating in the real world of a nature striving towards ends is a reflect of the conscious experience of ourselves which we immediately possess. Because we purpose and effect consciously, we are able to apply the notions of efficient and of final cause to the objects of the real world as known to us. Just as we find the relations which constitute order in our cognition, so we find the relation of purpose in our conation, or striving and willing. For purpose is a relation which we cognize as obtaining between ourselves and the ends which we wish, and set ourselves to attain.

The whole of this section dealing with the relations by which thoughts are linked together objectively into a coherent system as being the thoughts of a Self may be referred to a second law—which I again paraphrase and slightly modify—viz., "We tend to evoke immediately from any two or more mental items a knowing of relation between them."

So far we have considered several most fundamental facts in the Psychology of personal experience—the immediate awareness of the active Self cognizing mental objects, and the relatedness of it to its objects and of these to one another. In particular, we have been concerned with the order brought about in our mental world by relations, and especially by the causal and purposive ones. But all this leaves us still within known experience—within our own minds. We have in no way transcended our own personal world, or given any psychological account of the process by which we come t tran-

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scend it and so to believe in the existence of extra-mental bodies and of other minds. Beside the two psychological principles, or laws, already stated, however, there is a third which not only is verified within our conscious experience itself, but enables us also to pass beyond it.

By means of the two former principles we account for conscious experience—Self, mental objects, relations; but all these must be held to be within experience already. It is when we attend to this or that or the other element or relation that it emerges from the subconscious or unconscious state and becomes clear, or gains in clearness. It has the character of *having been* there.

But the third principle is one which covers what may be called in an especial way the creative aspect of mind. It may be stated as follows. "We tend to evoke immediately from any mental item thought, together with any relation applied to it, the thought correlate of that item."

The formulation of this law, which seems to be little more than a commonplace when we come to examine it, is in reality a very great achievement. While our power of educing, or abstracting, relations has been a recognized part of psychological doctrine for centuries, and while the distinction between experience and cognition has long been known, nobody until recently seems to have perceived that hitherto unknown correlates, not directly given in experience, could be generated by the application of a relation to some other item of consciousness. Perhaps this was due to the fact that in adult life, at any rate, reproduction of past experience seemed to



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explain all the facts adequately. And, indeed, reproduction is so often intermingled with genuine education, that it is generally difficult to say where the one ends and the other begins. But our principle here has to do with original education, in virtue of which a vast amount of what we actually do reproduce in point of fact was originally created by us. Examples may be necessary to make this law clear.

Suppose, in virtue of the first principle, I have the mental item "black" as a thought; and, by the second law, the relation "opposite." When I apply the relation to the item, I think "white." Or again suppose the thought is "rose," and the relation "similar." I may then think "red," or "carnation," or the like. In either case I may be, at least partially, recalling past experience. But had I had no past experience of it, I still could have found some item correlated with that one originally thought. Many instances have been given of this; but one will here suffice in illustration. It is quoted from Hume (*Treatise of Human Nature*, Bk. I., Pt. I., Sec. 1) by Spearman :—

"Suppose a person to have enjoyed his sight for thirty years, and to have become perfectly well acquainted with colours of all kinds, excepting one particular shade of blue. . . . Let all the different shades of colour, except that single one, be placed before him, descending gradually from the deepest to the lightest. . . . Now I ask, whether it is possible for him, from his own imagination, to supply t<sup>h</sup>is deficiency? I believe that there are few but will be of opinion that he can."

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Hume, though he evidently did not realize the immense importance of what he wrote, was right. Experiments show that such a feat is possible. And the explanation of its possibility is the law as enunciated.

But the scope of the law is far-reaching. It is a law which operates not only in the field of sensory awareness, as in the instance given by Hume. It operates on the conceptual plane also. For example, if the original item to which I apply a relation itself be a relation, I shall educe a correlate to it :—“ Truth—Opposition—Falsehood ”; or “ Goodness—Similarity—Beauty.” It is thus a principle which applies both in the real and in the ideal order indifferently. But it must not be forgotten that it is a psychological principle, a law expressive of one of the ways in which I, the Thinker, think; and not merely a logical one, though doubtless it can also be expressed in logical fashion.

There is one case, however, of the operation of this law in which both the real and the ideal are involved, a case which is of the utmost importance both in fact and for theory. It is the case in which the Self, immediately known as a real existent, is the item to which the ideal relation is applied. Let that relation, educed as all relations are from experienced mental objects, be the relation of otherness or negation. And at once the correlated item “ other than Self,” or “ Not-Self,” is educed.

What are the characters of this “ other than,” this “ Not-Self,” insightfully known as transcendent to consciousness? And what is the original item—the real Self—to which the relation of otherness is applied?

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Is it the Self immediately cognized as experiencer, or the experiences as known? An answer to this second question will determine what we mean by mind.

We have already rejected the worn-out view that mind is merely a group of conscious experiences—sensations and images; and we have used the term, loosely and provisionally, either to indicate the experiencer or the experiences as cognized by it. The truth would seem to be that experiencer *plus* experiences constitute the mind. For mind is known as existent only in its acts—as knowing objects, or as feeling or willing them, and the like; and all these acts are experiences. They are aspects of an essentially active thing; and the known objects “in” the mind are psychical and not physical objects.

Apply then to mind, as experiencer and as experiences, the relations of otherness or negation, and you educe a world of extra-mental realities known as such. Apply to space and time and substance and the like, as experiences, the same relation, and you have a knowledge of space and time and substance transcendental to your own mind. Project in the same way the notions of cause and purpose upon your extra-mental world, and it becomes no longer a mere monotonous procession of phenomena, but an essentially casual order of real things. Apply the relation of opposition to the experienced reality of your Self-activity, and you generate the knowledge of inert otherness, or matter. Or let it be the relation of partial similarity rather than complete opposition, and the result will be some compromise between the absolutely active and the utterly inert.

By applying different relations to different com-

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plexes of elements and aspects of experience all the entities and aspects of the extra-mental world, the world transcendental to consciousness, can be accounted for *as known by us*.

But one complex of related elementary personal experiences is of paramount significance and importance. I refer to our own bodies. These, like every objective complex in experience, are within, or part of, consciousness itself. Still, by reason of the law by which we transcend consciousness and reach an extra-mental world, we place our own bodies in that world also. These bodies, however, as complexes of conscious experience, differ in several fundamental respects from all others. In the first place, they are always with us, whereas others are not. Whenever we are conscious, we are, even if only vaguely and marginally, aware of them in some way. We possess them to some extent in the visual sphere—we know our bodies by seeing them—to a greater extent in the tactile, kinæsthetic and cœnæsthetic. It can even be argued that in sleep and anæsthesia these related sensations are at least subconsciously experienced. But this need not be argued here. Other complexes are not always consciously experienced. We can close our eyes to them, or withdraw ourselves from them. We can turn our attention elsewhere, and so escape them. But we cannot, normally, withdraw from cœnæsthesia, nor altogether from kinæsthesia, any more than we can withdraw from the immediate awareness of the Self to which all this is present as its own. We thus “carry our bodies about” with us in experience; and we mark them as in a very peculiar way our own when we “project” them into

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a transcendental world in virtue of the law we are considering.

It will not be necessary to do more than to allude to such facts as those of double contact, local signature, the co-ordination of several impressions from different sensory fields, or—above all—the continuity of changes, especially kinæsthetic, with volition in voluntary action, to emphasize why my body differs for me from all other bodies.

We now come to the final aspect of our problem. Having accounted psychologically for the transcendent world, and for my own body as forming part of it, though always in a unique way my own, it still remains to account for other minds (or mind in general) and at least to state the problem of psychophysics, even if we do not solve it.

How do we reach other conscious Selves, or scious beings, as existing outside the ambit of our own personal consciousness? Surely, in virtue of those self-same laws which we have been considering. The bodies of men and animals, like plants and inanimate objects considered as units—or, if you will, considered as aggregates of units—are, psychologically speaking, the products of the application of relations to intra-mental conscious experiences. But other relations, similarly applied to the same experiences, compel us to think them not only as utterly other in point of individual existence, but also, in point of generic or specific likeness, as utterly identical with our own. I say "generic or specific" with the implication of all sorts of degree in likeness—from mere matter which can be educed from Self-activity as something absolutely inert, to the most structurally

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differentiated and completely organized bodies which, because of their structure, and still more because of their behaviour, we regard as specifically identical with our own.

The student of Philosophy need not here be reminded of the interminable mediæval controversy over the Universals. Realism, conceptualism and terminism all have their roots in this psychological fact.

Still, while we may have accounted for our knowing of other transcendental organized bodies in this way, we have not yet accounted for our belief that they, by their structure or their behaviour, manifest mind to us in varying degrees.

Most text-books of Comparative Psychology take for granted the extra-mental existence of the objects of which they treat, and with Spinoza use the argument from analogy to show that as our bodies and behaviour are to our minds so are the bodies and behaviour of other men and animals to their minds. Such text-books, further, frequently claim that the study of the animal mind throws light upon our own, and permits us to include mind as well as body in a scheme of organic evolution. But clearly, if we argue by analogy, we are arguing from our own minds, and from some connection which we believe them to have with our own bodies. We postulate a similar connection in other cases, and theoretically construct minds from them more or less like our own. We are told that somewhere the analogy breaks down, as we press it lower and lower in the scale of life; and that, in any case, it must be used with caution. But does such a construction of "other" minds help us in

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any way to the understanding of our own, when we are merely reading our own mind into other bodies? I cannot see that it does. At best we reach a curtailed and jejune replica of what we may already know in introspection. And, even so, we can have no clear concept of the animal mind, high as may be the level at which we construct it.

It seems to me, further, in this region of exceedingly unclear notions, that, before we speak of other minds being in some way connected with other bodies, we must determine what we mean by the connection in our own case. And, to do this, we must begin once again with our own mind—*i.e.* the conscious experiencer, or Self, together with its experiences. From this, as we have seen, we reach an extra-mental world in which our bodies are located, in virtue of the principles of cognition. But these principles are not sufficient to explain all mental process, for they do not cover either affection or conation. And it is in conation that we shall discover, if anywhere, the real facts by reason of which we know that there is a connection between body as known, or believed to exist extra-mentally, and mind as immediately known in itself.

I shall illustrate this by a simple instance. Suppose, always remaining in the intra-mental sphere, I will to place the index finger of my right hand within the palm of my left, and carry this action out. Neglecting much that happens, in this there is awareness of my willing—of Self-in-action—followed by changes in the make-up of my body as consciously experienced by me. There are various kinæsthetic changes, often affectively toned. There are the

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double contact sensations of touch, complicated by pressure and temperature sensations, all coloured by local signature. There is also the mild satisfaction of having done what I willed to do, and consequent relief of the slight mental tension involved in willing.

Now, since all that we are at present considering occurs within the sphere of my mind, the sequence in question is not merely a phenomenal sequence, but a causal one. In such willing, the Self is causal, and is immediately known as causal. There is no inference about it. Self is intuited in causal relation to its own experience, which, indeed, is a modality of it. It is from this intuition, and from this alone, that we derive, as has been said, the notion of cause.

But notice. When my body, distinguished *within experience* as experience from experiencer, is known as extra-mental, it is known with exactly the same relations as those which affected it as intra-mental. Accordingly, it will be related to the immediately evident Self by (among others) a causal relation. In other words, so far as changes take place in it dependently on willing, they will be the effect of the consciously experiencing Self.

Now it is possible to apply relations to our bodies, as known, also; and thereby to frame theories of psycho-physical interaction, or parallelism, or even epiphenomenalism. But I do not think it can be maintained that we have insight with regard to any one of such theories, which have so taxed the ingenuity of the philosophers, in the same way as we have insight with regard to the causal Self. But, if there is insight at all, what evidence there is would seem to be in favour of interaction. This is certainly



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the most natural, and probably the most widespread, belief. Epiphenomenalism, in view of the fact that matter, *as we know it*, is a "construct" of mind, is an ingenious theory, akin to that in which the world is made to rest upon a tortoise.

We are now prepared to apply the three laws, or principles, of knowledge to our belief in the existence of other minds than our own, or to mind in general. Since our experience permits us—indeed, compels us—to "know" other bodies transcendental to itself, yet more or less similar to our own; since that similarity includes behaviour which, in our own immediate experience, is insightfully dependent on Self as consciously causal; we interpret it also by analogy as dependent on a mind—a Self, or something like a Self, in some way objectively aware of things and situations; and by, and in proportion to, that awareness, modifying behaviour. Once again stress must be laid on the fact that this "knowing" on our part is not the result of a consciously logical argument, but of the unconscious working of psychological laws which it has been the attempt of this paper to analyse.

# PSYCHOTHERAPY

By J. A. HADFIELD, M.A., M.B., Lecturer in Psychology, King's College, University of London.

PSYCHOTHERAPY is the treatment of morbid conditions, both of mind and body, by means of mental processes. Since time immemorial men have healed by means of mental power. Some of these methods have been scientific and others not. The unscientific methods are variously termed mental healing, spiritual healing, faith healing. By unscientific we do not necessarily mean false. Many things unscientifically apprehended, like the appreciation of music and the judgments of our intuition, may nevertheless be true. We mean only that the truth is not obtained by the ordinary scientific methods of observation. It is the scientific methods, especially those like analysis, which are founded on a scientific study of the nature of the disease which they attempt to cure, that are properly included in psychotherapy.

Amongst the disorders with which psychotherapy deals are "mental" conditions such as obsessions, worry, fear, morbid ideas, a sense of inferiority and lack of confidence; "moral" conditions like delinquencies, stealing, lying, bad temper and sex perversions; it also deals with symptoms of a physical order which it believes to be of a psychogenic

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nature, conditions like hysterical paralysis, functional blindness and nervous dyspepsia. In scientific psychotherapy only those disorders of mind and body are treated which are considered to be psychogenic, that is, to originate in abnormal mental processes, and not those like cancer or tuberculosis, whose cause is organic.

In the course of our study of these abnormal states of mind and their cure, we naturally form opinions as to the nature of the mind—opinions which may not be very fundamental, for we are not philosophers, but which may nevertheless throw some light on the nature of mental processes.

There are four aspects of the mind upon which I believe Psychotherapy has some light to throw:

- The dynamic nature of mind;
- The determinism of the mind;
- The autonomy of the mind;
- The extent of the mind.

This paper attempts nothing more than a brief elucidation of these points.

### *The Mind as Dynamic.*

Most of us have been brought up to think of the mind as a structure; it is built up out of the various sensations and impressions which rain upon us from the outside world. The mind, it was said, is passive, and its function is to receive these impressions, store them up and reproduce them in memory. That is the structural view of the mind.

The more modern view is that the mind is *dynamic*; it consists of a mass of potential forces. We hear

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us turn, then, for a moment to look at these dynamic forces, which, for brevity, we shall group under the term "impulses."

### *Impulses:*

The instinctive impulses, like fear, pugnacity, sex, or the parental impulse, are psycho-physical—they have their physical side and their psychological. On the *physical* side, when we are dominated by such an impulse, there are the bodily accompaniments of the emotional states, the changes in circulation, breathing, skin reactions, and so on, reactions closely identified, of course, with the nervous system and with the glands of internal secretion; the adrenal glands being concerned in fear and anger, and the gonads in sex. An over-secretion of the gland in question is usually associated with a strong discharge of the impulsive tendency and increased desire. The diminution or absence of these glandular extracts will have similar marked effects on the mental state of the individual—transforming the fury of the bull into the docility of a bullock, and, in the case of the thyroid gland, making of the otherwise intelligent child, a blethering idiot.

But the impulses have their *mental* side as well: (a) An instinctive impulse is not merely a physiological reaction but a physiological reaction *accompanied by consciousness*. Every such impulse is accompanied by feeling, by sensations, by desire, pleasure, hope or despair. This psychical factor cannot at present be explained by any

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known physiological law or discovery. (b) Impulses are also mental in that they are *aroused by mental stimuli*. A "fit" may be induced by a psychical stimulus, as most neurologists will agree. When I am angry, it is not my brain or my adrenals which started me off, but a humiliation, a rebuff. The gland remains quiescent until aroused by some such stimulus. There is no evidence to indicate that it is the glandular secretion which causes the anger, but rather the anger which stimulates the production of adrenal secretion. We may test it in this way; if we inject into a person some adrenal secretion, it will produce the usual physiological changes, but will not make him angry. On the other hand, an annoying situation will produce both the physiological changes and the anger. This seems to indicate that it is the psychic element in the impulse which is normally the stimulating agent giving rise to the impulse. It is to be noted further that the stimulus in these cases is not merely the object seen or word spoken, but the meaning and interpretation of these. A servant girl heard the footsteps of a man in her bedroom and the excitant produced exophthalmic goitre, with excessive and persisting secretion of the thyroid gland. This was because she rightly interpreted the intruder as a burglar. Had she interpreted the footsteps as belonging to her lover, we may justifiably surmise that she would not have suffered from exophthalmic goitre. It was therefore not the sound of the footsteps but the meaning put upon them which determined the physiological response.

To put the matter in another way—to demonstrate

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the relative independence of the psychic factors from the physical manifestation; ordinarily the absence of the glands means a marked modification of the mental state of the individual. But one may have absence of glands, say the sex glands, as in the eunuch, and continue to have sex desires; and, on the other hand, one may have perfectly healthy and normally functioning glands and nervous system, and yet suffer from the *lack* of feeling, impulse or desire, owing to psychological repression. That this absence of sex consciousness is due to psychical and not physiological factors is proved by the fact that these patients may have these feelings liberated by analytic treatment, by the removal of the repression. (c) Impulses are also psychical in that every instinctive impulse is *directed to consciously determined ends*,<sup>1</sup> and these ends have a determining influence upon the arousal and the nature of the impulse.

These facts and considerations are important to us in psychotherapy, and help us to understand the nature of what we call the "functional nervous disorders," or "psychogenic" diseases.

We may have disorders of the mind from any of the above-named determinants of the impulses, from disturbances of the impulses either in their physiological aspect, the psychic stimulus, or of the psychic end.

(a) For there may be disorders arising from the physiological factor. Impulse to murder may be caused by disease of the brain; anxiety or irritability may be due to toxæmia. Such cases, of course, are

<sup>1</sup> I do not include reflex actions which belong to a different category from impulses proper.

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those adduced by the physiologist who attempts to prove that all disorders are somatic in origin.

(b) But there may be disorders in which the physical part of the impulse is perfectly normal, but the impulse is abnormal only in that it is aroused by false situations or directed towards false ends. The psychoneuroses, according to modern theories, are due to abnormalities in the psychical part of the instinctive impulse. The shell-shocked man, who has a hysterical paralysis of the arm, is not one whose nervous system is primarily at fault, or whose glands are abnormal, but only one whose instincts have taken a wrong direction, and a readjustment of his mental aspect will cure him. In all other respects he is quite normal; he is happy, cheerful, and is often extraordinarily cool in a situation of real danger, which would not be the case if the physiological mechanism of fear were at fault. The present writer had such a patient, who always had a fit when he was on a road between a grass field and a ploughed field; he was, of course, quite unaware of the connection. One could hunt till Doomsday to find a physiological basis for this: it was the psychic situation that mattered. It may be contended that there "must have been" a predisposing physiological basis to his condition. It is difficult to know on what grounds this can be maintained, since nothing physiologically wrong could be found either before his treatment or after his cure. Such a claim is pure supposition, and we are dealing here with facts, not with suppositions. Or again, to take an illustration of an abnormal *end* of the impulse, the man whose sexual instincts are directed towards

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a fetichistic object, or whose attachment is homosexual, is not necessarily one whose sex glands are at fault—these may be perfectly normal, but wrongly directed—and this is proved by the fact that if the mental attitude is changed, these instincts are directed to normal objects, and the so-called pervert becomes a normal human being. Again, to take a case of hysteria: a woman may have a repressed craving for sympathy, but that craving may take an abnormal turn and find expression in a hysterical headache. Here again the impulse is disordered on its psychical side, because directed to what we consider a wrong end. But what do we mean by a “wrong end”?

If an organ or impulse acts in such a way that it does not fulfil its purpose we say it is disordered. Without consideration of such an *end* we cannot, as McDougall has shown, speak of “disordered functions” at all. The mere activity of an organ or impulse is different from its function: its function is the activity directed towards a certain end. The heart may be very *active*, and yet by no means fulfil its *function*. An impulse may be active—it may, indeed, be over-active—but if it is not normally fulfilling its biological function we call it disordered. Thus the end towards which the activity of an organ or impulse is directed is of primary importance in determining its normality, and if it is wrongly determined we may have the development of a psychoneurosis. When a lady is afraid of a mouse we do not consider that a normal reaction: it is normal from the physiological point of view—the nervous system, the endocrines, the muscles are all



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working perfectly; all that is wrong is that it is aroused by a mouse, that is, by a stimulus by which we consider it ought not to be aroused. Therefore we regard it as an abnormality. If it be maintained that such abnormal reactions must be accompanied by some physical changes, however small, we agree. But (a) that does not mean that these physiological changes determine the psychical, nor (b) are these changes, *as* physiological changes, abnormal. A body which responds with anger, fear or sex to an abnormal stimulus, may be in itself just as normal as one that reacts to a normal stimulus.

### *The Determinism of the Mind.*

But when we speak of the independence of the mind, we must not be taken to mean that the mind is ungoverned by law. The mind is governed by law—but its own laws, and not the laws of physiology, any more than physiology is determined by the laws of geology, though undoubtedly they share many laws in common. Watson says that the formulation of the physicist as to the atomic constitution of matter is quite acceptable to the psychologist, but that his formulation does not help us very much in specific psychological problems (p. 40). The same applies to physiology in its relation to psychology.

We note, incidentally, this is precisely the argument the “conscious” psychologist brings against the behaviourist. The behaviourist *method of study* has been in vogue amongst psychologists for many years; we regard it as a most valuable method of investigation, but as inadequate to explain all the

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facts of the case, particularly the fact of consciousness. The study of man's "behaviour" alone is analogous to the method of the early economists, who formulated the "economic man"—a conception which served a useful purpose, but whose purpose was very limited.

Psychotherapy gives strong support to the view that the mind is subject to the laws of cause and effect as is any other science. Indeed, psychology could not be regarded as a science unless we accepted this fact.

It is a common belief that some thought may have come into consciousness on its own and without relation to any previous thought. If we restrict ourselves to consciousness that is true. But a further investigation into its predecessors shows that every thought has some causal relation with every previous thought, and that a thought cannot emerge in consciousness from nowhere, any more than a fish can appear on the surface of the lake without coming from its depths. Now that we can investigate the so-called "unconscious" processes of the mind, we can easily discover in each case what is the preceding thought which determined its successor. Walking along the street we are thinking of music and suddenly find ourselves thinking of the war. There is no apparent connection, but we find, on retrospective analysis, that quite subconsciously the thought of the war has been suggested by the word "tip" on the placard of a sporting paper, suggesting "Tipperary." We cannot start a train of thought absolutely afresh: it is always found to have some relation to previous thought. Dr. Ernest Jones gives an amusing illustration of this. A young man intrigued by a moonlight

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night into making love with a damsel, suddenly feels he is going too far, and determining to change the subject entirely, naturally turns to astronomy; he asks the lady if she can name the planet furthest from the earth visible to the naked eye. His answer was, *Venus*. His mind could not start afresh, and betrayed him. Our investigations in psychotherapy teem with illustrations of this kind. There is no habit, trait of character, idiosyncrasy, or peculiarity of thought or feeling which has not its roots laid in previous processes of the mind. These roots are almost always discoverable, and invariably we find that the "motives" behind them are of a dynamic nature. We believe then in psychic determinism, namely, that cause and effect operate as much in the mental as in the physical sphere. If we did not believe that we could have no science of the mind; we could not study laws in which there was no uniformity.<sup>1</sup>

### *The Autonomy of the Mind.*

We have already observed that mental factors play an important part in the arousal of the impulses, and in the stimulation of all the physiological accompaniments of emotion. So the mind comes to have a determining influence over the body.

The opinion that the mind can affect the body, as well as the body affect the mind, is, of course, the deduction of common-sense experience: but common

<sup>1</sup> Psychic determinism is not at all the same thing as philosophic or ethical determinism—indeed we may some day discover that what we call free will *is* a law of the mind.

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sense being the last consideration of the scientist and suspect in the eyes of the philosopher, it will be necessary to bring forward other proofs from psychotherapy and from experiment.

### (a) *Common Sense*—

It is a fact of our experience that our minds are autonomous and every one of us acts upon that supposition—even the physiologist and behaviourist. I know of no physiologist who does not assume, not only that he *has* a mind, but that his mind is capable of initiative and independent action by means of the function we call the will. It may be argued that this fact of observation is an illusion and that what seems to us to be the autonomy of the mind may be a fiction. That is true, but then equally so may be all our scientific observations—for, indeed, every scientific observation is nothing but an act of consciousness. Before we abandon the common-sense view upon which in fact we all base our actions—and, indeed, common sense is by no means invariably correct—we must have adequate grounds for abandoning it. At present no proof to the contrary has been adduced except the corresponding fact that disorders of the brain are frequently found to affect the functions of the mind. The influence exerted by the body over the mind is accepted by physiologists and psychologists alike, being based on the facts of experience. But it does not prove anything but what it says—namely, that physiological functions can affect mental : there is nothing in it to deny the corresponding fact of observation, equally supported by experience, that the mind can

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also affect the body. To argue that because physiological disorders of the brain are commonly found associated with mental disorders, that therefore mental functions are *always* determined by physiological processes, is going far beyond the facts, and indeed against the facts.

### (b) *Psychotherapy*—

A man is carried into a consulting-room, having suffered from paralysis of both legs for two years. He has been the round of neurologists, whose treatment along physiological lines have had no effect whatever. He is treated along psychological lines, is induced under hypnotism to recall the experience in which he was buried and nearly suffocated under a huge tent in a storm, and in ten minutes' time gets up and walks out of the room. A sudden and dramatic case is particularly chosen because it can hardly be open to the criticism sometimes urged against more prolonged analytic treatment that the patient would have got better anyway. Now in such a case the pure physiologist who holds to the physical theory is in a dilemma. Either he must accept the fact that the patient's physical condition, being cured by mental means, was psychogenic, that is to say, due to mental causes; or he must assume that mental treatment can affect and cure a physical condition. In either case we are compelled to the belief that the mind has power to influence and change physical processes.

### (c) *Experiment*—

Several experiments, scientifically conducted, have

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been made to prove the influence of mind over bodily processes; perhaps the most striking of which have been the production of blisters by suggestion. The present writer published accounts in the *Lancet* in 1917 and 1920 describing such experiments. The patient was hypnotized and an onlooker touched his arm with the suggestion that he was touching him with a red-hot iron. The subject immediately winced as though badly hurt, and in a varying period of time in different experiments a blister with all the signs of inflammation was formed. The state of hypnotism was not necessary to such experiments, for similar results on body temperature have been produced in waking suggestion; the patient's arm, for instance, being lowered from 92° F. to 68° F., and raised again to the original temperature. These experiments show considerable modification in the functions of the physiological organism. No doubt it will be said that the heat centres of the nervous system "must have" been affected. We agree, but our argument precisely is that psychic stimuli—or, in other words, the mind—can and does effect a determining influence and control over such physiological functions.

Conversely, we have touched a patient with a hot iron and produced a blister, with the suggestion that no pain should be felt, and no pain was felt, which shows that consciousness does *not* follow stimulus in that mechanical way that some physiologists would have us believe.<sup>1</sup>

<sup>1</sup> It is interesting to note incidentally that the real blister in which no pain was felt healed more rapidly than the corresponding one in which pain was retained (*Lancet*, 1917).

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We conclude, therefore, that mind is not a mere secretion of the brain, but a potent force which, whilst being conditioned to a large extent by bodily processes, has an autonomy of its own and is able to exert a powerful influence in determining the voluntary movements, automatic functions, and emotional responses of the body.

Now how are these facts to be explained? The Parallelist view that the two processes, mental and physical, run parallel to one another without any causal relation involves us in a radical dualism against which the scientific no less than the philosophic mind revolts. The Epiphenomenalist view that the mind is a product and function of the brain is attractive on two grounds: it is simple, and, to the human mind intolerant of doubts, simplicity is often taken for truth; and secondly, it is natural to believe that the simpler forms of life came first and gave rise to the higher and more complicated mental processes. But it also fails to explain the vast array of facts that go to prove that mental processes can dominate and control physiological functions.

We may avoid this radical dualism without doing violence to the facts by a theory of this kind—*that in the course of evolution the mind was originally an offspring of the brain and a product of physiological processes, but that the mind, having once developed, achieved, like any offspring, an autonomy and independence of its own—so that, while the body still retains its old influence over the mind, the mind, now liberated and developed, can in turn exercise a dominating influence upon the parent from which it sprang.* Such a theory

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is in line with what we otherwise know of biological evolution; it explains all the facts brought forward on the physiological side; and does credit also to the kind of experiments in psychotherapy to which we have already referred.

Two objections are raised to such a theory: first, from those who regard consciousness as merely a product of physiological process; and secondly, from those who deny altogether that there is such a thing as consciousness.

An obvious objection raised against the theory might be that we cannot conceive a function without an organ, and therefore cannot conceive mind operating except as a function of the brain. Such an argument can hardly be maintained now that physics is tending to prove that what we call "matter" is made up of functional units of electric charge. Besides which there is nothing to preclude and much to suggest that mind has a structure of its own. After all, the medium by means of which the "wireless" message comes is a purely hypothetical one. Yet we accept it as a fact, as we do the mind, though we cannot see or observe the structure of the mind any more than we can observe the structure of waves of ether. Both may operate independently of the instrument which gave them birth. To say "no function without organ," if it is taken to mean no consciousness without a brain, is to repeat a mere slogan which, like most slogans, must go by the board in the face of the advancing progress of our knowledge.

Now observe what takes place when we try to explain consciousness in terms of physiological



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process. We are, in the first place, trying to explain something of which we as physiologists have no cognizance whatsoever; and, in the second place, our method of explanation is merely a substitution. To take the latter point first: when the physiologist tries to explain consciousness as a function of the brain, all that he is doing, as Janet long since pointed out, is *to take the fact of consciousness observed otherwise than by physiology, put it into physiological terms and then claim to have explained it.* But we do not explain a fact, still less do we explain it away, by explaining its mechanism, even presuming that the supposed mechanism is correct. We have not explained jazz music when we have explained all the mechanism of the saxophone and the ukelele, although that would probably be a sufficient explanation for the instrument maker. We can only explain jazz music when we have explained the soul of the composer—if he has one!

It is a very simple picture, that of the stimulus affecting the sense organ, and the impulse, passing along the nerve, producing certain physiological reactions. It is a very *true* picture as far as it goes—but it does not explain consciousness. We can sacrifice too much in the interests of simplicity.

Further: consciousness is a fact altogether beyond the cognizance of the physiologist as such, and he has no knowledge of, or concern with, conscious processes; if, therefore, he is to be consistent, he should never refer to terms of consciousness in his physiology. He has no right as physiologist to speak of a "sensation," or "feeling," or "conscious-

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ness," for these are psychological facts observed quite apart from his science. All the investigation in the world of physiological processes would never so much as suggest such a thing as a conscious sensation—nerve stimuli, yes; nerve impulse, yes; physiological reactions and responses, yes; but never a "feeling." The discovery of "thought" by physiological methods has never so much as been suspected.

The physiologist may hope some day, by his histological methods, to observe consciousness under his microscope, and we may look down upon slides in which irascibility is stained purple, envy stained green, and love stained, let us say, pink. But where at present in the physiological organism can consciousness be found; and where is the place of understanding?

Up to the present we have admitted consciousness as a fact. But there are those who deny that consciousness exists at all. For the physiologist this is a more consistent view than that which accepts the facts of consciousness and "explains" it in physiological terms. Indeed, the great apostle of the abolition of consciousness altogether deprecates the activities of those who half-heartedly admit the fact of consciousness, as a weakness to the cause of behaviourism (Watson's *Psychology from the Point of View of a Behaviourist*, Preface, p. vii). The physiologist as such has no use or place for consciousness.

But the facts of consciousness, though not in the sphere of the physiologist, are nevertheless facts of observation like any other. All science is based on

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observation—and by observation we mean the direct awareness of a thing. Now we are directly aware of consciousness, just as we are directly aware of the existence of this book. In both cases we may be mistaken; our observation of this book may be a hallucination, as may be our observation of our own consciousness; but the observation of the one is just as valid as that of the other. It is a fact which we cannot directly observe by the study of physiological processes; it is a fact that we cannot observe by the study of animals or other humans except by inference. But we cannot get rid of a fact of observation simply by denying its existence, or because it is not discoverable by any particular science, or does not fit in with our particular theory.

### *The Extent of the Mind*

Those interested in the mind have always felt that there were processes beyond the sphere of consciousness. This realm of the mind has been variously termed the "subliminal," indicating that these processes were too feeble to reach the threshold of consciousness; the "subconscious," indicating that they were conscious, but not in the full focus of consciousness; the "foreconscious" and the "unconscious" of Freud, indicating respectively the part of the mind which we can recall at will, and that part which is beyond recall, except by special processes, like that of hypnotism or analysis; or alternatively, the "preconscious" being that part of the mind which brings us into touch with objective

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reality, whilst the "unconscious" consists only of repressed libidinal wishes. Finally, there is Jung's division of the mind into the "personal unconscious," consisting of the repressed and forgotten experiences of our own individual lives; and the "racial unconscious," consisting of that part of our mind which we inherit from our forefathers, and which are typically manifested in the bizarre and mythical forms of our dreams.

All these theories express the idea that there are processes of the mind of which we are not fully aware, that the mind is vaster than consciousness.

A simple illustration of such unconscious processes is the fact that we may feel ourselves unreasonably irritable and worried during the day and be quite unaware of the cause of it; it is only on introspective investigation that we realize it was some occurrence at breakfast that determined the mood. In such an instance the mental processes, though forgotten and unknown, nevertheless continue to be active and operative. But there are people who are permanently worried who have not the least idea as to why they worry. Or they "worry about nothing," recognizing that the supposed causes of their worry are not the real ones. They are neurasthenic.

This principle we find to be profoundly important in psychotherapy, in which, at the same time, it finds its strongest proof and demonstration. For we find that the cause of the psychoneurosis springs, perhaps invariably, from a hidden source. The mental processes which give rise to these are unrecognized and outside the sphere of consciousness

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and are yet active and operative. The patient, suffering from depression, discovers that the real motive of this was originally, and is now subconsciously, merely sulkiness. It required the elucidation of the original motive to enable him to see the real present-day motive. The patient with nervous dyspepsia feels herself a heroine, and it takes a prolonged analysis before she discovers that "underneath" it is a method of securing sympathy—which she consciously loathes. The business man has a nervous breakdown in which he is convinced that he is a complete failure in life, whereas the real cause of his trouble is that he thinks too much of himself, and expects the impossible. Such discoveries as these suggest that there are realms of the mind which are active and dynamic, but which are inaccessible to consciousness by the ordinary process of memory reproduction.

Such cases as these, which demonstrate processes which are themselves hidden and unconscious, but which are nevertheless active and dynamic for life and conduct—in the one case sulkiness, in the other the craving for sympathy, and in the last case self-importance.<sup>1</sup>

But the question is whether these dynamic forces

<sup>1</sup> There is no direct proof one way or another. But inasmuch as we are constantly told that experiences leave their residue in the physiological structure of the cells in the brain, it is only fair to point out that there is no evidence whatever to prove this, and no physiologist can demonstrate to us such a change as the basis of memory. It is true that a negative fact of this kind does not prove that there is not such a change, but equally it does not give any kind of support to the theory, which remains a pure guess, although so many people take it for granted as though it were proved.

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are retained as changes in physiological structure or as psychological states.

It is natural to believe that what we call unconscious processes are really physiological movements and changes which are not active or vital enough to achieve consciousness. If physiological processes may give rise to consciousness, it is natural to believe that consciousness may also, as it were, fade from thence into a slumbering state, so that what we call subconscious mental states would then be merely physiological processes robbed of their consciousness, or whose consciousness is vague and subdued. According to this point of view, such processes are unconscious merely in the negative sense—it is unconscious, lacking in consciousness and therefore not mental at all, but physiological.

When an experience is “forgotten” it is because the experience is not sufficiently strong to produce a deep enough impression on nerve structure.

It is probable that there are processes of this nature, in which we forget things simply because consciousness simply *fades out*, leaving behind only slight traces in physiological disposition.

But psychotherapy provides us with innumerable facts which prove that this theory of retention and memory is inadequate.

The experiences which are forgotten are frequently the most important and emotionally charged experiences of our lives, and therefore it cannot be because of their lack of impression on the brain that they have been forgotten. Patients who have suffered motor-car accidents, have been blown up by shells, have suffered severe emotional shocks at ill news,

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frequently suffer from loss of memory of the event itself and of what immediately precedes and follows. This amnesia cannot be due to the fact that the incidents made so little impression that they faded from memory.

It may be replied that in these cases the amnesia was obviously due to concussion, the profound disturbance of the molecules of the brain altogether disturbing the mental functions. This theory is again disproved by the fact that one can almost invariably recover the experience, particularly under hypnosis, in greatest detail.

One of the most interesting features of this recovery is that as soon as we come to the time when such a patient is put under chloroform for an operation after being blown up, the memory is no longer recoverable. That is to say, when we come to the point at which changes in the brain are *known* to occur as a result of the action of chloroform, there appears to be an obliteration of mental experience, or at least of any which is recoverable, whereas whilst the patient was supposed to be suffering from "concussion" the mind processes are only forgotten and are recoverable. During the whole spell of unconsciousness not only before and after the experience, but while he was actually being hurled through the air, the patient was obviously conscious, or one would not have been able to recover his memory. But all this terrifying mental experience was entirely obliterated.

The physiological theories of memory and forgetting fail, we maintain, to explain such facts as these which imply that there is a vast realm of mental

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material dynamic enough to produce severe symptoms of a psychoneurotic kind, but which are themselves hidden from conscious recognition.

The alternative theory is that the process of forgetting is not a fading out, but an active dynamic process, to which Freud has given the name "Repression."

The experiences which one technically calls "repressed" are those which because of their nature have been, as it were, pushed out of consciousness, the function of this process of exclusion obviously being that they should no longer disturb the equilibrium and present activities and endeavours of the mind. This fact of active and purposive forgetting is now generally accepted by academic psychologists as well as psychotherapists.

Further, it is not merely experiences of a traumatic nature that are thus recoverable; but experiences dating back to earliest childhood, even the first year, can be revived with great vividness in a hypnoidal state. I have, for instance, recently treated a patient who recovered into memory the occasion on which he was weaned, and the recovery was so vivid that for the rest of the evening, as he told me later, he was spitting out bitter aloes! These old memories still remain active and charged with emotional tone, as we may see any day when we liberate them. We can only assume that these experiences have been retained *in a mental form*, and whilst we must assume that such a repressed experience is bound to have physiological consequences, these physiological changes *are* consequences and not causes. Further, we must assume



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that even whilst these experiences are repressed they are at the same time *active*, for we see their results in the life of the individual, and particularly in the production of abnormal conditions. The unpleasant rebuff of the breakfast table will, though forgotten, affect us unpleasantly all day. A latent craving for love and sympathy denied in childhood will produce a hysterical symptom in a patient who, far from being conscious of a craving for sympathy or seeking it, deliberately takes pains to avoid it—that is, the craving is unconscious and repressed, but is nevertheless an active *mental* experience. It is, in fact, by tracing back to their source these morbid conditions that we have discovered that seething pool of emotions and morbid cravings which we sometimes call the Unconscious.

To summarize: whilst we may hold that the mind originally developed as a function of physiological process, we believe that the present facts of observation of the mind in the study of psychotherapy indicate that it has developed an independence of its own, and that it is governed by its own laws; that in extent its processes reach beyond what is at any moment present in consciousness, and that its dynamic nature is demonstrated, not only in the ordinary affairs of life, but in the motivation of neurotic symptoms which are the result of the misdirection of its impulses.

# PHYSICS

By Professor F. A. LINDEMANN, F.R.S., Professor  
of Experimental Philosophy in the University  
of Oxford.

THE suggestion that physics, the essence and epitome of the behaviour of the universe, might be regarded in some measure as a distorted image of the projection of the human mind upon external reality, would probably have been repelled by most Victorian physicists as little short of blasphemy. The mind, in the view of that robust generation, was regarded as the entity which elucidated and formulated the immutable laws of nature; it could have no more effect upon them than the personality of an explorer could have upon the nature of an island he might discover. To-day the scientist's outlook is less dogmatic and perhaps more tolerant. Though he is still obliged to assume an objective reality in order to justify his existence, even the most old-fashioned physicist would probably admit that his mental predilections play a considerable part, if only in selection and arrangement, in the way he represents the external world to himself and others. The purpose of this lecture is to emphasize the fact that, though the so-called physical laws will be in general consistent with reality, there is no certainty that the indefinables employed in their statement or the particular relations they embody have any fundamental

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significance beyond their appeal to the mental preferences, prejudices or infirmities of the physicist.

The metaphor of the explorer lends itself readily to exemplify this statement. He might return with a contour map of his island giving a clear account of its main topographical features; he might return with a description of its fauna and flora. On the other hand he might report that all paths were uphill, omitting to observe that he always marched along the course of the rivers; or that the rivers were exactly one day's march apart, refraining from remarking that he always camped as soon as he reached the banks of a stream. All of these statements would be consistent with reality, but the relative value of the first two and the last two would depend upon whether one was interested primarily in the circumstances of the island or the mentality of the explorer.

The point to be examined in this lecture is how far the various laws of physics are essentially natural pre-existent laws, stated of course in terms convenient to the human mind, and how far they are primarily mental laws imposed upon the external world by the mind in its struggle to interpret reality; in what proportions, in other words, the subjective and objective components, which every statement in physics contains, are mixed. Obviously, since this is entirely a matter of degree, the question has no meaning unless one can discover some criterion which indicates to what extent the two factors intervene.

The only line of attack which presents itself is to examine how one's statement of physical laws would change if one varied one's mental processes. The

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nature of the case precludes any claim that this will definitely lead to the formulation of any certain method of measuring the relative importance of the mental and the external factors; it will probably be agreed, however, that a conclusion which can be reached equally from various mental pre-suppositions is of more far-reaching validity than a conclusion which is essentially connected with a certain mental standpoint. Clearly such an examination is not easy to carry out encased as we are in our mental conventions; the utmost we can hope to do in the time available is to indicate how such an enquiry might be set in train by considering one or two particularly striking instances.<sup>1</sup>

Perhaps the most obvious mental habit to examine is the particular choice which is almost universally made of the indefinables. The commonest indefinables used in physics are space and time. So deep are they rooted in our language and habits of mind that it is difficult to consider, and almost impossible to discuss, physical relations in other terms. Yet in principle this must be perfectly feasible. Take, for instance, the formulation of Newton's law of gravitation. In the usual terminology it reads: "Masses attract each other with a force proportional to their product and inversely proportional to the square of the distance between them." The subsidiary concept force is defined as that which accelerates a mass, acceleration being defined as rate

<sup>1</sup> Throughout the classical electromagnetic terminology will be employed. The use of light quanta and undulatory mechanics would not materially affect the argument and might introduce elements unfamiliar to certain members of the audience.

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of change of velocity, velocity again being rate of change of distance. Let us try and formulate this law using other indefinables, *e.g.* let us retain mass, but substitute for space and time electric charge and action. It is true that almost everybody believes himself to know intuitively what space and time are, whereas scarcely anybody claims this knowledge of charge and action. Nevertheless, let us assume for the moment space and time were unknown and charge and action were familiar. Then Newton's law would read simply: "In considering the relation between any two masses they must be held to have, in addition to any real charge, fictitious opposite charges of (roughly)  $2,59 \cdot 10^{-4}$  electrostatic units per gramme.

In this way, though with great difficulty, on account especially of the structure of our language, a consistent system of physics might be built up using other indefinables than the usual space and time. Those chosen above by way of example were selected for two completely extraneous reasons; firstly, since they appear to be essentially atomic in nature they would lead to nothing but whole number relations; secondly, they are invariant to relativity transformations. Obviously numerous other sets or groups of indefinables or thought-co-ordinates are conceivable.

If the physical universe can be described in various systems of indefinables the questions seem important. Is there any special validity in our choice of space and time and how has the choice of these particular thought-co-ordinates influenced the development of physics? From the purely logical standpoint it would seem clear that no particular set

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of indefinables has any special pre-eminence. If observations can be equally well described in various terms the only criterion can be convenience. It may be objected that the human mind has an immediate intuitive perception of space and time which it has of no other indefinables. The accuracy or inaccuracy of such a claim can only be left to the individual judgment. This much may however be said, that a comprehension of the conventional implications of these particular indefinables is, in our present social system, inevitably the first to be inculcated, whether by the affectionate suggestion of the parent or the more intemperate, but none the less potent, methods of the nurse-maid. How hard it must be for the mind to release itself from such early influences modern psychologists will probably be the first to recognize.

The effect upon the development of physics of the choice of space and time as indefinables or thought-co-ordinates can scarcely be overrated. More especially relations expressed as functions of the time seem to have acquired a disproportionate importance compared to those concerned with other thought-co-ordinates. Thus the mind appears to display an almost unhealthy craving for permanence in time. Any quality or group of qualities which has this property is singled out, given a name and classified and examined as though it were the last word in beauty and wisdom. The pre-eminence for centuries of "mass" is a notorious instance of this mental favouritism, though a fancied slight inconstancy has of late appeared likely to lead the mind to transfer its affections to electric charge or

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even energy. If this latter should carry off the palm it would be a particularly flagrant instance of mental arbitrariness. Very many years ago a quantity measured by the product of the mass and half the square of the velocity of particles was given the name "*vis viva*" or "energy of motion." Observation showed that the total energy of motion, the "kinetic energy" of a closed system, always attained the same value if the parts were freed from forces and constraints, though it might disappear completely when the forces were allowed full play. The mind could not bear the thought that anything with such a resounding title as "energy" should have gone out of existence in such an interval of time. With a facility, perhaps not altogether admirable, it sought consolation by constructing a ghostly form of energy whose existence could never be verified or disproved since it was not susceptible of observation, and called it "potential energy." The quantity of this product of the mind was postulated as exactly equal to the kinetic energy which had disappeared. One had merely to omit the adjectives kinetic and potential to be able to state with complete conviction and satisfaction the "Law of the Conservation of Energy," a law more fertile and more useful despite, or perhaps on account of, its dubious origin, than any law of physics enunciated to this day.

Compared to this almost pathological craving of the mind for constancy in time, its mild fondness for constancy in space, as evidenced for instance by the concept of a regular solid, is positively healthy. The reasons for what the modern psychologist would

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probably call the "constancy in time complex," appears to be related to the duration of human life and history compared to the spatial dimensions of the stage upon which it is played. If we adopt the geometrising method of the space-time continuum the material universe may be pictured as a series of filaments or threads representing protons and electrons lying, in general, more or less parallel to the time axis. Any given moment is represented by a three-dimensional section through this four-dimensional world. It is evident that this gives the relative positions of the ultimate particles, their state of motion being defined by the angle they form with the intersecting surface. In such a picture a Bohr atom of hydrogen would appear as an almost straight protonic thread surrounded by a helical electronic thread, the radius of the helix being  $5,5 \cdot 10^{-8}$  cm and its pitch, as far as we can see,  $9,1 \cdot 10^{-8}$  cm. Heavier atoms would appear as more complicated systems or strands with numerous electronic threads surrounding one nuclear "rope" consisting of a more tightly wound system of protonic and electronic threads, and macroscopic particles would consist of a vast array of such systems or strands aligned almost parallel to one another. Perhaps the most interesting object of all is "the observer" familiar to every reader of a treatise of relativity. If a human observer he would consist of a group of atomic strands, some  $10^{16}$  at first surrounded by the strands of the parent weaving in and out of his group. Passing along the time axis one would find that one strand after another was woven into the observer's group until, when their number had reached some  $10^{27}$ , his group



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separated spatially from the mother group. Strange strands from great distances now enter for greater or smaller distances from the observer group, some being rejected after a comparatively brief period ( $10^{12}$  to  $10^{15}$  cm), others being assimilated into the group and remaining interwoven with it for  $10^{18}$  or  $10^{19}$  cm. From say  $2 \cdot 10^{19}$  cm onward the group would reject almost as many strands as it assimilated, and the observer with some  $10^{28}$  strands confined in a group some 100 cm in spatial extent would continue for some  $5 \cdot 10^{19}$  cm along the time axis until gradually the system disbanded after his death.

That such an observer should lay special stress on permanence in time is only reasonable. His time dimension extends over some  $5 \cdot 10^{19}$  cm whereas his spatial dimensions are less than 200 cm along his longest axis. With such an asymmetry in himself a preferential treatment of the extended dimension is only to be expected. But this way of envisaging the universe at once raises a much more difficult question. According to the principle of relativity each observer himself defines and has a right to define his own time axis. Exactly how it is to be defined is not clear unless one considers periods great compared to, say,  $10^{-9}$  seconds,<sup>1</sup> but for long periods it would presumably be given with sufficient approximation as the longest dimension of the observer. The question is, however, what defines "the present," the boundary between past and future. From

<sup>1</sup> Though it is obvious which way a road runs if one considers a stretch long compared to the width, it would be by no means obvious if one could deal only with a section of a length comparable with the width.

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the physicist's view, not only is no particular "present," *i.e.* section, pre-eminent; as far as he is concerned there is not even a differentiation of sign, *i.e.* of past and future. And yet if one refrains from the narcotic of solipsism and maintains one belief in an objective external reality, not only does each observer have a very definite perceptual "present" but all, or at any rate an enormous number of observers, have practically, if not exactly, the same "present." Were it otherwise communication between them would be impossible. It seems possible, if somewhat artificial, to assume that there are numerous, if not innumerable, "presents" spaced along each observer's time axis, so that each one finds contemporaries. The alternative seems to be difficult from the relativity standpoint, namely, the assumption of some "world-present" moving irresistibly along some world time-axis to which the individual observer's "presents" in some way are made to conform.

Without entering into the equally difficult question of the apparently very real distinction between past and future, *i.e.* why one cannot remember the future as well as the past, this much seems clear, that the insistence upon representing reality in terms of space and time leads to problems which are not always realized by those seeking a solution upon a purely physical basis.<sup>1</sup> Whether it is possible or not for the human mind to use other indefinables, it is perhaps too early to say; there can be little doubt that it would be extremely interesting to attain the totally

<sup>1</sup> For the relation of this question to the "Quantum" problems, see *Mind Supp.*, Vol. IV. Aristotelian Soc., 1924.

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different, though consistent, view of nature to which such a method would almost certainly lead.

As another mental habit which has had the most far-reaching effects we may instance the universal, and one might almost say subconscious, acceptance of the law of causality. Though this is intimately connected with the choice of time as an indefinable, it appears to be in no sense a necessary consequence of it. Whether in fact it could be stated at all except in terms of sequence of events in time may be doubtful. But that one could imagine a sequence of events not subject to the law of causality seems certain.

In space-time terminology the simplest statement of the principle (a tautology, obviously) seems to be: The position of each particle at any particular moment is an inevitable consequence of the position of itself and all the other particles at preceding moments. In this form, of course, the statement is unsupported by the slightest evidence, even that of repeatability, for the exact circumstances of the universe do not recur. Causality only becomes plausible and for that matter useful if one introduces a well-known physical device, namely, the device of selecting those particles only for consideration which one considers likely to be of importance and excluding those one does not. How illogical this is need not be stressed, since "being of importance" is precisely the property one is concerned to examine. Granted it is possible, however, then one can arrange to repeat as often as one likes a given disposition and observe that within certain limits of error the experiment always takes the same course. This fact, that an experiment can be repeated, is often

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cited as an argument in favour of causation. In reality it would seem it should be regarded as a method of eliminating the unessential, causation being pre-supposed. In its ultimate sense the principle can be simply stated in terms of the space-time continuum. The curvature of any and every protonic or electronic filament is uniquely and completely determined by the positions and directions of the other filaments at their intersections with a cone of  $45^\circ$  whose axis is the time-axis.<sup>1</sup>

This statement brings out very clearly the connection of the principle of causality with determinism; if it be accepted, it follows that the whole course of the universe is completely determined by its previous history.

It will probably be objected that the mere representation of the world as a four-dimensional continuum involves determinism, since the course of the protonic and electronic strings is fixed and the "present" is a subjective phenomenon of the observer, whose consciousness intersects the continuum. This conclusion is not quite accurate. A priori there is no reason against supposing that the protonic and electronic filaments branch at more or less frequent intervals<sup>2</sup> into a fifth dimension; in other words that the course of a particle is not uniquely

<sup>1</sup> Since fields extend with the velocity of light  $c$ , the effective position of a particle at a distance  $l$  is the position it occupied at the antecedent time  $l/c$ , *i.e.* the intersection of the thread which represents it with the cone which represents the propagation of a light signal.

<sup>2</sup> The intervals might be zero, *i.e.* the filaments be the lines of intersection of five dimensional surfaces or even higher dimensional figures with the four dimensional continuum.

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determined. It might be that the observer's consciousness branches likewise or even selects, though this latter seems more improbable. The somewhat mysterious apparent ability of a material particle to choose a certain path, indicated by such classical laws of mechanics as Hamilton's Principle or the Law of Least Action (though perhaps this difficulty may disappear in the new undulatory mechanics), would lend itself to such an interpretation. It is the mental insistence on causality which vetoes such speculations.<sup>1</sup>

The desirability of abandoning causality has become a living question since the full realisation of the difficulty of representing atomic processes by the classical laws of electro-dynamics or even by differential equations. An effort to escape from its tyranny may be found in the matrix methods of Born and Heisenberg which, at the sacrifice of any hope ever to be able to visualize the processes, certainly succeed in representing the facts with great fidelity. Their attempt to replace the concept of a law by the introduction of a probability may or may not become a scientific commonplace. At the moment de Broglie and Schrödinger's alternative, the new undulatory mechanics, appears to find more favour, possibly rather because it spares our mental prejudices (since it maintains causality and continuity), than for any other reason. A third way of attacking the problem is equally interesting. By developing a new algebra in which all the ordinary rules hold

<sup>1</sup> An intermediate view is conceivable if one assumes a principle akin to that of causation, but imagines the equation to have two or more roots at more or less frequent intervals.

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except the commutative rule of multiplication, Dirac has shown that the same results may be obtained as by either of the other methods. That three such divergent lines of thought should all be able to represent the facts of observation and predict the results of new experiments with so much success, seems to show the very fundamental objective nature of the phenomena in question (Quantum Phenomena).

It is early yet, if not too early, to proceed further. Scarcely free as we are from the shackles of Euclidean geometry it is rash perhaps even to envisage the next step. For the conventions and sanctions which bolstered up Euclidean space are as nothing to those which will be invoked to maintain inviolable the sanctity of logic. Yet the prediction may be permitted that even this stronghold of the formalist will one day be invaded. If non-Euclidean geometry has been shown to be possible and even applicable to physics, if arithmetic in which  $2.3$  is not equal to  $3.2$  could be developed, and has even proved adapted to physical calculations, can it be maintained that an alternative to our ordinary logic is unthinkable? The attack upon the citadel will indubitably be launched, whether it will prove successful the future alone can tell. For more than a hundred generations defences have been subconsciously prepared. The most important perhaps is language. Logic, indefinables and mental habits of thought have moulded it and have been moulded by it to such a degree that it is almost impossible to escape from the tyranny of its perpetual suggestion. Aristotelian logic is enshrined in the structure of a sentence, the temporal indefinable in the conjugation of the verb. The symbolism of the

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mathematician alone has remained free. No other, probably, can usefully devote himself to the problem.

Let us briefly recapitulate the results of our considerations. Some laws of physics, for instance the Law of the Conservation of Energy, are in great part mental. This does not render them less valuable; on the contrary, their heuristic importance is immense. Other physical formulations, for instance those usually summed up under the heading "quanta," appear to be an aspect of reality with a greater objective content. That this is so is shown by the very fact which makes their meaning so difficult to comprehend, namely, that the most various lines of thought lead to the same result. But since all physical acquisitions contain a large mental element how does the physicist select any particular process? Ultimately he has only one criterion, the pragmatic one of usefulness. He does not endeavour to justify it, nor does he claim for it any special validity. If a hypothesis suggests new lines of advance it is adopted and tried. If various hypotheses give the same result they are all employed and tested until one has proved to lead further than the others. Sometimes it leads into a cul-de-sac, and the physicist has to retrace his steps. His labour, however, is but seldom wasted; he desires to map out the maze, not to escape from it. To a certain degree those hypotheses most akin to our mental processes will be favoured for the very reason that the mind, being able to handle them easily, will be more fertile in using them than if forced into alien channels. The unprejudiced physicist will make use of this characteristic. He may even hope that the mind, being

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part of nature, may work along natural lines. It may be, however, that certain natural happenings may not be susceptible of treatment by the methods which long use has stereotyped in our mental processes. The physicist will not endeavour to force nature into an unsuitable form. He will consider whether his mind may not be trained and moulded into a shape suitable to deal with the events he observes. It may be that he attempts the impossible, that he sacrifices in vain, in his undignified effort to adapt himself to nature, the complacent attitude of benevolent superiority which characterizes the philosopher. His consolation—and that it suffices is one more instance of the mind's craving for permanence in time—is the knowledge that those creatures which were adaptable have survived, whilst those which refused to fall in with nature's mood have perished.



# PHILOSOPHY

By the Rev. W. R. MATTHEWS, M.A., D.D., Dean  
of King's College, London.

LADIES AND GENTLEMEN, anyone who undertakes to discourse upon the mind from the standpoint of philosophy in the space of one hour lays himself open to legitimate suspicions concerning his own intelligence. The task which I have rashly undertaken requires an abnormal degree of temerity. For it is clear that the whole long and complex effort of philosophy has been directed towards this one object—the elucidation of the nature of the mind, its powers and limitations and its place in reality. From the day when Socrates turned from the confused and uncertain speculations of the physicists of his time to the study of concepts as offering a hope of certainty and clarity, the work of philosophy has been essentially the thinking about thought. An adequate account, therefore, of what philosophical reflexion has made of mind would be nothing less than a complete history of philosophy. I need not say that any such enterprise is far beyond my present intention; and I think that I shall best fulfil the designs of those who arranged this course if I attempt to give some account of what seem to me to be the more important views which are now held, and perhaps indicate the judgment which, in my opinion, we may reasonably pass upon them. It is necessary to add that a

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lecturer in such a case as mine requires more than an ordinary allowance of charitable indulgence. Inevitably in a hasty survey of a wide and difficult field systems of thought must be indicated in a few words in their main outline, and injustice will be done to distinguished thinkers by the omission of all that wealth of subtle and ingenious argument which gives their thought most of its value.

It may be that some justification for the appearance of philosophy in such a course as the present will be required. The other lecturers have, I may be told, dealt with the mind from every possible point of view, and it may be asked what is left to be said? That ancient problem which has furnished the peg for so much metaphysical argument—the relation of body and mind—has been taken by Dr Aveling, who has dealt with it, in a masterly fashion, as a question for psychology. And it must be confessed that the story which I have to tell differs at first sight painfully from those which other lecturers have been privileged to unfold. The advance of science seems like the assured march of an army of many battalions, never turning back, each element supporting and supplementing the efforts of all the others. Philosophers, on the other hand, appear to be a collection of warring partizans proceeding in different directions. They do not move on, so it seems, to new problems. They are discussing the same questions as those which occupied them when philosophy first began. The nature of knowledge, the nature of reality—these are still open questions. There is a story of Renan, I think, being shown the room where theologians had for centuries debated in

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the Sorbonne. He asked: "And what have they concluded?" The same question addressed to philosophers might perhaps meet the same reply.

There is an answer to be made to this objection to the incursion of philosophy; an answer which, in my opinion at least, is conclusive. In the first place, we may notice that the harmonious advance of all the sciences along parallel lines is not perhaps so much a fact as an ideal. I think I have observed, even within this course of lectures, a grave divergence of standpoint between the physiologists and the psychologists, a divergence which extends both to presuppositions and results. There is surely needed some attempt to reconcile these differences, or at least to co-ordinate the apparently contradictory conclusions. Moreover, the progress of science itself appears to be leading directly to the problems of metaphysics. My distinguished colleague, Professor Wildon Carr, has often insisted upon this fact in lectures given in this place, and I will allow myself the pleasure of quoting his words :—

" Science proclaimed its positivity. It claimed to touch the absolute. Its principles seemed sure, and an infinite vista of orderly extension lay open before it. Its work, it declared, was not to speculate on origins or final ends, but to accept the actual, to tidy up, to reduce all disordered and chaotic life and knowledge to orderly arrangement. To-day we know that this ideal has not been, and cannot be, realized. Philosophy is necessary to science and science cannot provide it from itself. The continued advance of scientific invention and consequent dis-

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covery has raised metaphysical problems in science and compelled us to reconsider and reconstruct the basis of science itself." (*Scientific Approach to Philosophy*, pp. 24-25.)

But the chief and sufficient reason for the cultivation of philosophy and the need of listening to its admittedly rather confused utterances is that the problems which it is considering are real problems, and in the long run inescapable ones. We cannot avoid raising the question: What is knowledge, and how do we know that we possess true knowledge? We cannot avoid raising such questions, for instance, as: Do electrons and the unconscious mind really exist, and if so what do we mean by the words "really exist" in this sentence? We cannot help asking ourselves: What is the ultimate nature of reality and the place of mind within it?

### I

All human thought is haunted by a duality a contrast. Every act of knowing, from the most primitive to the most complex, contains within it the subject and the object, the knower and the known. On the object side of this relation has been developed some conceptualized system, which is to say, from the most primitive condition of things to the relativizing that the *world* as we have begun

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abstract concept of "nature." Thus the common-sense view of the position in which we find ourselves is that there are two kinds of reality, two "substances," as Descartes said, which differ completely in their nature, and which yet are in relation with one another. On the one side is the mind, the knowing subject, and on the other independently existent objects related to one another in various ways. It is an old and often-told story that this common-sense philosophy has in fact led to the most intractable perplexities. It has led, in the first place, to a position in which the problem of knowledge has become quite evidently insoluble, for if my knowledge of reality must consist of representations of or images of an object which is different from, outside of and independent of, mind, then it is clear that I can never know if or when my image of reality or representation of it corresponds with the externally subsisting object. In order to achieve this knowledge I should have to possess a mind which included both my own mind and the object which it occupies in knowing. The outcome of this way of presenting the facts is inevitably the scepticism of It is then something more than a desire for a reception of reality which has led thinkers to the effort to overcome this dualism of mind and matter, though that motive has been strong and has even more depending upon the possibility of knowledge

the possible views of  
We start inevitably  
must somehow

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transcend. We may take as our starting-point either side of this dualism and seek to resolve the other into it. We may begin, in other words, with nature or with mind. It is, of course, obvious that a great deal will depend upon which side of the given contrast we elect to accept provisionally as fundamental. The problem will be stated for us in different terms according to the basis on which we put it. On the one hand, if we are impressed with the superior "reality-feeling" of nature, of the world of objects, as compared with the transitory and evanescent character of the knowing subject, we shall present to ourselves the problem of "the mind's place in nature." If, on the other hand, we decide that there is at least some truth in the Cartesian axiom "*cogito ergo sum*," that thinking is the reality of which we are certain, the problem will be turned upside down and we shall be led to inquire: not "What is mind's place in nature?" but "What is nature's place in mind?"

## II

I suppose that it will be most in accordance with the plan of these lectures, which have taken the subject of mind primarily from the point of view of natural science, if we begin with the question which is first of all a philosophical question: "What is mind?" It is important that we should be clear from the outset of the problem which we are dealing with. It has been said that the mind is something which does not exist in space.

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is, explain how it is possible for this particular insight into reality to have been produced by that reality—no philosophy which does not do that is adequate, and this is a particularly important remark in connection with “naturalistic” theories. We must not allow the thought to escape us for a moment, or we shall be bewildered by the array of technical terms and mathematical formulæ of which theories of this class are prolific. The philosophy of nature is a piece of knowledge about nature presented as being true and as having been evolved by that very nature which it knows. The philosopher of naturalism has to explain to us how mind has come from what is non-mental, how nature has produced knowledge of itself, how truth has emerged from that in which there is neither thought nor purpose. He has, moreover, to explain to us what he means by truth. I will confess at once that I think he has undertaken an impossible task, and that he sometimes appears to succeed in it only by inadvertently including mind in nature from the start. But let us proceed to the proof. And here I must beg to be excused from considering a view which, so far as I understand, is maintained by some, I mean the view that experience is identical with physical events. I do not agree with, the view that a mental event is caused by a physical event, but I simply do not understand what a thought is a change in a vibration, that red is a vibration, that a synapsis, a kyma, I must

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respectfully decline to discuss the proposition, not because I think it false, but because I am unable to attach any meaning to it.

The philosophies which have attempted to envisage mind as merely a product of nature have received the generic name of "naturalism." The concept of evolution obviously furnished an attractive and suggestive line of thought along which this postulate might be worked out. The massive works of Herbert Spencer remain as a monument of long efforts consecrated to the task of tracing the rise of higher types of being out of lower by the aid of the clue of evolution. I am far from asserting that any consistent theory can be gathered out of Spencer's writings, but on the whole it would be true to say that the leading principle of his method is to explain the higher by the lower, to make difference of quality and value equivalent to difference of complexity and structure. There is, I suppose, general agreement that the attempt as Spencer worked it out is a magnificent failure; and, indeed, it is sufficiently obvious that complexity of structure and quality or value, though in many cases they may comitantly vary, are by no means identical with another. The evolutionary theory of Spencer failed to give any reasonable account into being of life or consciousness. which claim the name of naturalism. need of giving some more account of coming into existence of purpose have developed "emergence."

It would be a



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any description of the speculative theories of emergent evolution which have been elaborated. Doubtless the systems of Professor Alexander and Professor Lloyd Morgan are familiar to many of my hearers. I must here consider very briefly the meaning and value of this concept of "emergence." Probably Lloyd Morgan's words defining the general meaning of emergent evolution give us as good an account as we can find:—

"Evolution in the broad sense of the term is a name we give to the comprehensive plan of sequence in all natural events. But this orderly sequence, historically viewed, appears to present, from time to time, something genuinely new. Under what I here call emergent evolution stress is laid on the incoming of the new. Salient examples are afforded in the advent of life, of mind, and of reflective thought. If nothing new emerge, if there be only regrouping of pre-existing events and nothing more, then there is no emergent evolution. . . .

. . . Through resultants there is continuity in process; through emergence there is progress in reality." (*Emergent Evolution*, pp. 1, 2 and 5.)

... The importance of the concept of emergence will, I think, be clear from this quotation. Among the things which it contains, or rather, of which it is composed, are simply the straight-existing facts or events, the things which have existed who had adequate means; but there are the things which are results

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but not resultants, they are new qualities *in analysis*. not, as such, contained in their antecedents *strangely*.

I wish to speak with the utmost respect *passing* to thinkers who have developed this concept. *formal* respect also of the concept itself. *ty,"* that "emergence" is a valuable descriptive *temporal* of certain aspects of the evolutionary process, *we must* assuredly most important that we should have being, have these aspects in mind so that we do not *they are ex-* the error of thinking of evolution as the *and finally* unwinding of a chain. But, I would *al but non-* concept of emergence take us beyond *determination of* Is it any more than a convenient sur- *determinate* served phenomena? We may all *every case of* there is continuity and that there is *ad's name is* new qualities within that continuity; but *were, three* curiosity about the reason why there *had God. An* emergence. It is the task of philosophy *of these* to describe, but to explain. Perhaps *a somewhat frivolous illustration. W*

a conjurer produce a rabbit out of a creature *shows* have felt some pleasure when the *definit e result* to explain how it was done; but we *temporal actuality* greatly disappointed if he had informed *every creative* the passes of his magic wand reached *ination which* of complexity the rabbit emerged *ld requires an* knew that already.

The concept of "emergent evolution" *anging consist-* be the result of an attempt to find *(Ibid., p. 94.)* between mechanism and teleology.

it must be *con-* certain that the exponents of this *is conception in-* pudiating even the purely immaterial *of those who are* Bergson's *élan vital*, and at the *pression of mathe-*

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material mechanism of the materialist theory. concerning well be questioned whether this hybrid to one a not destined, like many hybrids, to be obscure; we may notice that in Alexander's theory concerns there is said to be a "*nisus*" in emergent not a product which has led from space-time to matter, course apart and may be relied upon, we are assured, rightly who higher types of existence. We may There is not this Lloyd Morgan's statement that, "concretions must not think of the course of evolution an orderly & "according to plan," yet we must could be that it proceeds "so as to produce a plan." or forms and difficult to distinguish these views from

If we may might be described as "immanent tele-argument, but venture to suggest that it will be found several points the theory of emergent evolution was

(a) We have taking place in the passage to a more the problem of logical conception of nature. I will soon adopting, and confess that I can make nothing emergence. Immanent teleology. A purposive product stands, does no reference beyond itself appears to may conceal from sight to the absurd conclusion that an exists. We wait some influence before it happens. If regard "emerging" to accept the modest hypothesis challenges further which exists can be in any kind of Morgan and various other objects or events, we shall accepted and we reach the conclusion that, since a teleo-doctrine which one in which the earlier events can reality. Understood in relation to the later

(b) The general must in some sense have existed naturalistic philosophy of being. There is no teleological which we have self-explanatory. We are always significance of knowledge to some transcendent

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being; and the only hypothesis which has any meaning in this connexion is that of a thinking mind.

If there is any value in this argument, that the whole process of evolution and concept of emergence is really a teleology, and, as such, implies the concurrence throughout, and it will follow that this manner of deducing mind from nature or appears to succeed—only because it assumes the presence of mind from the

It should be added here that Professor Morgan does definitely and in the most fashion end with the assertion that for the standing of the universe we must rise to the sphere of temporal succession and to the levels of existence and conceive a universe which is not becoming, but "timeless"; must not, indeed, conceive the universe in an egotistic manner, setting the activity of the self on one side, and the plan of created things on the other. Nevertheless, we may speak of the order as Divine purpose :—

“It is that activity which is reaction—in that which obtains in the world, which obtains in man, each according to his nature” (*Life, Mind and Spirit*, p. 287.)

Even the most superficial surv<sup>t</sup>  
living philosophers of nature mus<sup>t</sup>  
to the writings of Dr A. N. White<sup>s</sup>  
I think, a little apart from the wri<sup>t</sup>

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sing. Though he may certainly be developing a theory of emergent evolution, primarily interested in biology, but in physics. It is perhaps for this he seems completely exempt from the supposing that the conception of emergence is more than descriptive. We find in him a quality which is encouraging after the heavy burden of credulity which other thinkers of the school have made. They are inclined to see nature as a "going concern"; it is only to transport us to a very remote period to a period when it had not reached its culmination; but that there is a nature going on seems to them to need no proof. We are well aware that the basis from which—  
—the only certain basis—is the present experience :—

only interpret the past in terms of the present is all that you have; and unless you can find general principles which present as including a representation of the unity of existents, you cannot move out of your little patch of immediacy. . . . The only thing you are immediately conscious of is the present moment of experience to that nature which is the object of our expounded here, but we are com-  
*Religion in the Making*, pp. 84, 85.)

the given which Whitehead carries out with the intention of showing how we may pass from the present moment of experience to that nature which is the object of our expounded here, but we are com-

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pelled to notice the final outcome of this :  
 We come back, it would seem, to a view s  
 reminiscent of Platonism. Within the actua  
 and experienced world we may distinguish  
 tive elements." There is first "creativi  
 character of reality on which depends the  
 passage to novelty. Beyond this actuality  
 postulate "ideal entities or forms," which b  
 but are not themselves actual, though tl  
 emplified in everything which is actual ;  
 we must affirm the existence of an actu  
 temporal entity "whereby the indeter  
 mere creativity is transmitted into a  
 freedom." This entity is God. Thus  
 an emergent event, for which Whiteh  
 an "epochal occasion," containing as  
 factors, other creatures, ideal forms, etc.  
 "epochal occasion" is a concr  
 elements :—

"The inclusion of God in eve  
 itself in the determination whereb  
 is emergent. God is that non-te  
 which has to be taken account of  
 phase." . . . "The definite dete  
 imposes ordered balance in the w  
 actual entity imposing its own un  
 ency of character on every phase."

Professor Whitehead does not  
 fessed, go to much pains to make  
 telligible to the weaker intellects  
 unaccustomed to the severe com

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reasoning, and there are several questions  
 ing the relation of the " formative elements "  
 nother which are left, perhaps purposely,  
 but the main issue of his reflexion as it  
 our problem is clear enough. Evolution is  
 ess which goes on for a large part of its  
 t from mind. We do not put the question  
 en we ask how nature produced mind.  
 o " unminded " nature, for there are no  
 s " or epochal events, no happenings of  
 haracter—in other words, nothing which  
 led nature, apart from the ideal entities  
 God.

now sum up the conclusion, not of our  
 g of our survey, we may, I think, note

—<sup>w</sup> found those thinkers who approach  
 —ind from the standpoint of natural-  
 vei some form or other, the concept of  
 only we have seen that this concept, as  
 pre:t answer any question, though it  
 you the unwary the fact that a question  
 e led to the conviction that we must  
 nce " as a provisional formula which  
 r reflexion. In the case of Lloyd  
 jitehead this conclusion is frankly  
 are presented, at the end, with a  
 fesses that mind is integral with

1  
 ; reason for this development of  
 pphies is also clear. The result  
 scribed is unavoidable when the  
 owledge and of values is clearly

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recognized. Admit that truth and goodness and beauty are real, that our experience of them is a part of the data for thought, and you seem to be driven to a view which transcends nature in any ordinary meaning of that word.

(c) I do not, however, admit that the result is so satisfactory that we may agree with these thinkers and hold that the setting out from the side of the object of knowledge, from the naturalistic standpoint of nature, is justified. On the contrary, such theories are always confronted with the problem of knowledge in its most intractable form. Assume that there is some kind of real existence which, even though not independent of mind, is yet other than mind, and you are in the position of being unable to account for the knowledge of that reality or to give any intelligible account of how you know that your knowledge is true. We have heard in this College the fascinating lectures in which Professor Lloyd Morgan explained his view of "objects under reference." At the time I ventured to express the perplexity which I felt concerning the relation between objects under reference and objects not under reference. Further reflexion has only increased my perplexity, and I must, I fear, remain an unrepentant idealist.

### III

We turn now to the type of philosophy for which the problem is not justly stated as mind's place in nature, but rather as nature's place in mind. Kant, as is well known, expressed the concept that "mind



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makes nature," thus laying down the principle of all idealistic theories. Two important remarks must be made upon the *dictum* which we have quoted. It is sometimes represented that an idealistic theory has some inherent hostility to science, or at least that idealist philosophy tends to undermine the foundations of scientific knowledge. Kant, at any rate, had no such purpose in view. On the contrary, his doctrine that nature is constituted by mind was advanced with the purpose of showing that knowledge of nature is possible. So long as we remain, that is to say, on the merely empirical basis and assume that our knowledge of nature must be built up from "impressions" conveyed to us from an "external" world wholly other than mind, we cannot escape from the conclusion that knowledge is impossible, since we can never have any assurance that our impressions and the "ideas" which we build upon them represent that independent reality. If, on the contrary, we can hold that every principle of order, the forms of perception, the categories of the understanding, the ideas of the reason, are imposed by mind itself, then we may have a real science of nature, for mind will be engaged in understanding that which it has itself created.

The second remark is perhaps too elementary to be submitted to this audience, but I will venture upon it. Sometimes it seems to be taken for granted that when the idealist uses language like that of Kant he really means the individual mind and intends as my dream, or, at any rate, dependent on my consciousness. There may be some force in the argument that certain

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types of idealism logically lead to solipsism—the doctrine that nothing exists but my states of consciousness—but it is certain that no philosopher, in the West at least, has held this. Kant did not mean that the finite individual mind makes nature, but that the universal mind, the transcendental subject, is the source of the natural order. If we have been at all accurate in our estimate of the tendencies of “naturalistic” philosophy it seems clear that some at least of its representatives need not seriously object to Kant’s statement, since in the last resort they are themselves led to a view which finds mind or spirit to be the foundation of nature. We may even notice that Professor Whitehead in one passage contemplates the possibility that his theory of nature may harmonize completely with Berkeley’s idealism. (*Science and the Modern World*, p. 105.)

You need not be afraid that I am about to trace again the oft-repeated story of how Kant’s critical idealism led to the development of the great German line of absolute Idealists. It is, however, necessary to remind you that in Hegel we have the culmination of the conception that mind makes nature in the theory that Reality is Absolute Spirit, the Concrete Universal; mind or rationality is all that exists. Of Hegel, perhaps more than any past philosopher, it may be said that he being dead yet speaketh, for the present situation of idealistic thought may be represented as both the carrying forward of his influence and the reaction against it.

Two great thinkers who have recently died—Bradley and Bosanquet—stand as doughty champions of the concrete universal whose systems have

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not, I think, been refuted, though the fashion of thought has perhaps somewhat passed them by. Bradley has pushed to their logical conclusion the two thoughts that the real is the rational and that reality is mind or spirit. For him the Absolute Reality is an experience coherent and harmonious in which all contradictions and discrepancies are resolved. Reality is spirit: but not personal spirit: yet we must not say that it is impersonal spirit, for it is not lower than personal, but higher, being above those limitations which seem inherent in personal existence. Nothing is truly real except this absolute experience, and all those finite beings and series of events which seem to claim reality cannot stand as independently real, for when we try to think them out they point inevitably beyond themselves and lead us back to the Absolute. Within the absolute experience there are infinite degrees of reality and truth. Some modifications of the Absolute approach nearer than others to full reality, but all are in the end appearance and relatively untrue.

Since the Absolute is beyond both knowledge and our judgments of value we may justly describe the outcome of this theory as an intellectualist mysticism. Our concern, however, is with the interpretation which such a philosophy would give to the status of nature and finite mind within reality. It is, as we have seen, in a sense true that reality as a whole is mind, though of a type which surpasses indefinitely our mental life. Finite mind, or rather the activity of coherent thinking, will be not, indeed, ultimately and finally real, but a modification of the Absolute which stands very high in the hierarchy of

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appearances. Intellectual activity, with its theoretically unlimited range and its striving towards coherence and comprehensiveness, is far up the ladder which leads to the Absolute. The so-called "external world," however, regarded as having real being for itself, is almost completely illusion. It is the result of an abstraction from the concrete whole of experience, and apart from experience the so-called objects of perception have no being. The "nature" which scientific thought deals with as an orderly sequence of events in space and time is an intellectual construction chiefly governed by practical needs. We may assume, if we like, that it has reality so long as that assumption is useful, but only on condition that we do not deceive ourselves by thinking that it has any ultimate reality or is more than one form in which experience manifests itself as forming a coherent system. The hypothetical entities which science employs, those which can never be themselves the objects of experience, are logical devices which are justified again by their usefulness. We may perhaps allow ourselves some regret that Bradley did not survive to see at least this part of his philosophy receive confirmation at the hands of science itself, for thus we may surely regard such utterances as that of Mr Russell that the electron is a "logical fiction," and that of Professor T. P. Nunn, which speaks of "scientific mythology."

It might seem that a philosophy such as that which we have briefly described had succeeded at least in eliminating all that is not mind. Nothing falls outside the Absolute, and the Absolute is spirit.

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But closer reflexion leaves a doubt whether the idealist road cannot be pursued still further. There is an element of transcendence still remaining. The Absolute is certainly something more than thinking as we know it, and its static perfection stands over against the change and becoming of our thought and experience. The last contemporary thinker to whom I shall have time to refer—Giovanni Gentile—has pushed idealism to its furthest limit and has removed from it the last vestiges of Platonic realism no less than of naturalistic realism. It is significant that he begins his most comprehensive book—*The Theory of Mind as Pure Act*—by a long reference to Berkeley, and it may be said that in Gentile Idealism completes its journey by reconciling the absolute idealism of Hegel with the subjective idealism of the English thinkers. The theory of Gentile seems to turn round three concepts or axioms. First, the assertion that if spirit is to be anything it must be everything. If we are prepared to hold that mind has reality we must hold that it is the sole reality, for otherwise we shall be led to represent mind or spirit as the product of that other reality and to resolve it into nature. Secondly, we have the important distinction which is indicated in the title of the work: the distinction between concrete thought or thinking (*cogitatio*), and abstract thought or thing thought (*cogitatum*). All previous philosophies have fallen into the error of confusing these two and have represented the universe as a *cogitatum*, an object thought. Reality, however, is the living thinking (*cogitatio*) in which the object has not yet been differentiated from the subject. The subject, the

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thinking act, can never become to itself an object, it can never be defined and known, but only immediately experienced. This brings us to the third concept—that of the Transcendental Ego. We must not suppose that our individual mind is the creator of the universe, if we mean by our mind what common-sense means. We must distinguish between the empirical ego, the ordinary self with its social relations, one among many, and the Transcendental Ego, which is the real creator, not only of nature but of my empirical self. I will borrow a few sentences from Dr Angelo Crespi's admirable account of Gentile in his *Contemporary Thought of Italy* :—

“ My deeper ego is not the one I can describe and define, but it is my very describing and defining activity, the subject which never can be object just because it is the very condition of my thinking of objects at all: it is just this my thinking of objects.”  
... “ Our empirical personalities are real only as rooted in and unified by the Transcendental Ego, the Spirit, the Person that knows no plural.” (p. 158.)

It is clear then that the place of nature in mind has already been answered in principle when these three concepts have been adopted. Nature can have no independent reality. Mind makes nature in the sense that all the objects with which natural science is concerned are created in the act of thinking, which is the sole reality. Indeed, the concept of nature is illegitimate, it is the postulation of that which is thought (*cogitatum*) as something other than and

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independent of the thinking which gives it reality; it is not act, but fact. Further, it is evident that on this view the conception of a universe—whether in the sense of naturalism or of absolute idealism—must be rejected. There is no whole of things, no completed system, no finished order, since the reality of the world is being created anew from moment to moment by the act of thinking.

Perhaps it will be well to state this remarkable conception as far as possible in the author's own words :—

“ But when from the naturalist's contemplation in which we are lost in the multitude of facts we rise to the philosopher's contemplation in which we find the centre of all multiplicity in the one, then the spatiality, the multiplicity, the otherness of nature and history, which constitutes their autonomy in regard to mind, all give place to the mind's absolute reality. The nature and the history of ordinary discourse are abstract nature and abstract history and, as such, non-existent. The otherness, which is the fundamental characteristic of each, were it absolute as it appears, would imply the absolute unknowability of both, but it would also imply—a fact of much more importance—the impossibility of mind. For if there be something outside the mind in the absolute sense, the mind must be limited by it, and then it is no longer free, and no longer mind, since mind is freedom. But the otherness of history and of nature, if we possess the real concept of the absoluteness of the ‘I,’ is no other than the objectivity of the ‘I’ to itself which we have already analysed. Nature and

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history, are, in so far as they are the creation of the 'I' which finds them within itself, and produces them in its eternal process of self-creation." (*Theory of Mind as Pure Act*, pp. 263-4.)

There are undoubtedly many inveterate prejudices which we should have to overcome before we could begin to take seriously the Actual Idealism of Gentile. At first sight it may appear to common-sense a mere absurdity; and it is, indeed, the direct antithesis of the view which is natural both to common-sense and science, namely, that mind is an object among other objects, a part of nature, even a natural product. Yet it has seemed, even in our short survey, that the attempt to show that mind is such a product is doomed to failure, and could only succeed at the expense of making knowledge impossible. We may also welcome in Gentile the fact that he does not ask us to conceive the mind which makes nature as different in kind from that which we know by experience. We are delivered from the impersonal Absolute. No thinker again has emphasized more clearly the aspect of mind as creative. That is surely a truth which lies on the surface; and yet we are often presented with theories which would suggest that mind is simply a mechanism to register changes in the physical order and to adjust organisms to the natural environment. It is a strange blindness which cannot see that it is of the essence of mind to create. Science, the nature which we contemplate in science, are themselves the product of mind, and beyond them in the sphere of social life, morals and art we have worlds which have come into being through



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thought and can have no continued existence apart from thinking.

Yet I confess that Gentile's theory and—in a lower degree—Bradley's seem to me incredible. Apart from all detailed criticism, there are two points on which we must needs feel dissatisfied. The first is the account which is given of nature. We may agree that nature apart from mind is unintelligible and, indeed, absurd; that nature is not alien to mind, since mind may know it, and in knowing it, know more of itself. But we cannot escape from the conviction that there is an objective order common to our minds and other minds, which proceeds independently of our individual thinking and to which we have to adjust ourselves. But still more important, in my view, is the second point. Is not one of the most certain facts about the world that there are numerous centres of experience and activity? My thought, though it may be supposed that it is not unintelligible to you, is still of otherhought and not yours. We may share ideas, we may know the same object and in the same way, but seeing, thinking and knowing remain distinct from mind, and they appear at different centres. Bradley confesses that he can see no reason why his "absolute experience" should distribute itself, so to speak, in different centres, and there is nothing in our experience to support the idea of Gentile that these centres are actually one centre—one Transcendental Ego—"that person that knows no plural."

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## IV

You will not be anxious to know my own positive opinions on the problem of mind and nature, and, indeed, it would be out of the question to attempt to give them now ; but some conclusions are perhaps suggested by the somewhat hasty excursions which we have taken in realms of thought which are not friendly to personally conducted tours of this description. You must have felt, I am sure, like spectators at a cinematograph entertainment. You have seen one philosopher after another flicker upon the screen, and before you had time to get a general idea of his appearance he vanished to give place to the next. Yet if these thinkers whom I have selected to discourse upon have been really representative, we have some indication of the direction in which different lines of reflexion are moving and of the general tendency with regard to our problem. We have seen that the naturalistic type of philosophy is explicitly or implicitly abandoning the attempt to deduce mind from an alleged non-mental nature, that even those theories which still pursue the path from the lower to the higher in the expectation that they will find thus an explanation, really surreptitiously introduce mind from the beginning, disguised under the very vague terms "emergence" and "nisus." We have seen reason to believe that those who posit the problem as "nature's place in mind" are nearer to the truth than those who reverse the order, and that there is truth in the statement "mind makes nature." Yet when we

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turned to the thinkers who had pursued this route we found perplexities of another kind. Very sketchy was their account of that objective order which we cannot really deny, and they seemed impelled by the force of their own logic to regard the real existence of finite minds, of centres of consciousness, as an illusion.

I suggest in conclusion that philosophy will be led to borrow one more concept from theology—that of creation, and to interpret it in a more theistic manner than Gentile or Bergson. For consider what the problem really is. We have minds which though separate and distinct from one another, yet think in the same way and are confronted by a common series of objects and events, and that nature which they contemplate is plainly not alien to and different from the knowing subjects, for it reveals its secrets to mind, and, in finding them, mind finds itself. That nature which reveals itself as an intelligible order, as always transparent to mind, must itself be an expression of mind, though not of our mind. The mind, without which the natural order and its development cannot be made intelligible, cannot be represented as the sole mind, the only knower, without contradicting the plain deliverances of our experience. On the other hand, it is equally clear that the mind which “makes nature” cannot be “wholly other” than ours, to adopt a phrase which Professor Otto has made famous. The fact of knowledge, no less than the experience of the moral and religious consciousness, would forbid the assumption even if it could be given any meaning. We are led, I believe, to the

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conception of creation, not indeed as a single act at some mythological beginning of time, but as an eternal act at the basis of our finite being. There comes an echo of an ancient writing: "Let us make man in our image after our likeness."

## EDUCATION

By J. DOVER WILSON, M.A., Litt.D., Professor of Education in the University of London (King's College).

THE exact title of this lecture, a title framed not by me but by the ingenious brain responsible for the course as a whole, runs as follows: "The mind considered from the point of view of the study of education." I remind you of this, because had it been expressed the other way about, viz. "Education considered from the point of view of the study of mind," you would no doubt have come here expecting an hour's discourse upon what is called educational psychology, and you would certainly have been listening to a different lecturer. I am not a psychologist; nor, to be frank, does the study of psychology yet appear to my lay mind to have acquired that body of common assumptions or that sense of a definite direction which one would expect in a science from which practitioners are to derive their technique. The subject which you, Dr. Aveling,<sup>1</sup> so brilliantly represent, is surely one of the most thrilling in the world of knowledge of our day; it opens up an uncharted ocean of exploration, and promises adventures which can only be paralleled in the realms of physics and—to take a much smaller field—Shake-

<sup>1</sup> Dr. Aveling was in the chair at this lecture.

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spearian bibliography. But just because of all this, it is the less satisfactory as a site for the building operations of others. Moreover, the common notion that the study of education is "nothing but" a branch of applied psychology is, in my view, erroneous. Students of education must, of course, make such use of the findings of psychology as they can—I shall myself humbly attempt to do so in this lecture; but the study of education is primarily social and not psychological; it is allied to economics, politics, anthropology, all of which, be it noted, are coming more and more to make use of psychological conceptions. "Education in the broadest sense," declares John Dewey, one of the soundest educational thinkers of our time, "is the means of social continuity."<sup>1</sup> It is education as thus conceived that we shall be dealing with; it is to mind, considered from the point of view of a branch of social study, that I must ask you to address your thoughts this evening.

Education emerged somewhat recently in the history of Life. And its development has proceeded *pari passu* with the development of society. The more social man has become, the more the growth of mind has taken upon it an educational colouring. Another way of expressing the same idea would be to say that in education we have both mind and society becoming conscious of their own growth, and not only conscious but self-directing. For just as in the individual mind there is the lighted stage which we call consciousness surrounded by a vast theatre plunged for the most part in darkness, so

<sup>1</sup> John Dewey, *Democracy and Education*, page 3.

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from the evolutionary standpoint, education, and in particular the deliberate education which we call schooling, is but the bright self-conscious foreground of a process of mental development which stretches away through dimmer and dimmer shades to the "dark backward and abysm of time" before mind was. Mind has been discovered in the lowest animal organisms, but nothing we can call education arises until after the emergence of the parental instinct which made infancy, that is to say, a period of learning, possible for the offspring of the species which acquired it. In other words mind begins to adopt educational ways of growth when animals begin to adopt social ways of life. Parents and young are the germ of society, as the parental instinct is the germ of education. Education and society were born of the same conditions and cradled together—the cradle of the higher vertebrates. Learning, however, learning from experience, comes before teaching; for teaching implies tradition. There are, no doubt, rudimentary traditions to be found in herds of animals and flocks of birds; but, as far as we know, they never outlast a single generation. Social tradition, in any solid and abiding sense, belongs to man alone, and is intimately bound up with the origin and growth of language. Thus tradition and language, being the two strongest agencies of social cohesion, imply another great step forward in education and the evolution of mind. For language not only enables mind to discriminate more consciously and more subtly than ever before, but it makes it possible for ideas to pass readily from one mind to another; in other words, it immensely

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facilitates the educational process, while at the same time it provides a medium by which tradition can not only be formulated, but easily transmitted from one generation to another.

These developments in the educational process, moreover, are accompanied by a corresponding increase in the length of time available for education. Man, the highest animal in the biological scale, is distinguished by the utter helplessness of his young as compared with the young of other creatures. And the higher he climbs the ladder of civilization the more anxious he seems to prolong that period of helplessness. Of all animals, man stands most in need of education. Of all men, those belonging to civilized societies devote most thought, money and time to its pursuit. Clearly, human immaturity has great evolutionary value, a value partly social and partly psychological. We have already noted that the coming of infancy meant the beginnings of society, and it has been well said that children are "marvellously endowed with power to enlist the co-operative attention of others."<sup>1</sup> But turn for the moment to the psychological aspect. What, speaking psychologically, do we mean by the "helplessness" of infancy? We mean plasticity or lack of specialization. The human race is the least specialized of the mammalian species, and it is to this fact that it owes its world dominion. Man's lack of specialization goes far back into pre-human days, and has determined the functions and form of his limbs. Had he sold his birthright for wings, he might have had flight; for hoofs, he might have

<sup>1</sup> Dewey, *op. cit.*, p. 51.



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had speed; for flippers, he might have had the amphibious life of the seal. Instead, he clung to life with his generalized hands, learnt to guide them with his eye, and so developed manual skill and a brain (as a telephone exchange between hand and eye) superior to that of all other mammals. But more important, and more germane to our present issue, than the lack of specialization in limb was man's lack of specialization in instinct.

Educationalists, from the author of the "Book of Proverbs" down to those responsible for the bringing-up of our grandparents, delighted to extol the example of the ant or the bee as a type of tireless industry which put to shame that love of play and dislike of work which seemed so incorrigible in the human child and could only be explained as original sin. "What is youth but an untamed beast?" asks an early seventeenth-century divine. "All whose actions are rash and rude, not capable of good counsel when it is given, and ape-like delighting in nothing but in toys and baubles? Therefore thou no sooner begannest to have a little strength and discretion, but forthwith thou wast kept under the rod and fear of parents and masters; as if thou hadst been born to live under the discipline of others, rather than at the disposition of thine own will."<sup>1</sup> Modern biology has reversed the positions of ape and ant in the scale of values, declares that the insect, with its fixed instincts has been left behind in a blind alley on the road of evolution, and asserts that play—"delighting in nothing but in toys and baubles"—is an essential preparation for the life of intelligence.

<sup>1</sup> *The Practice of Piety*, Lewis Bayley, 1612.

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Man, like other animals, possesses instincts. They are, however, not specialized as are those of the insect, but vague, plastic and therefore capable of indefinite modification. In a word, the fixed instincts of the lower animals have been replaced in man by education, education with its twin elements of play on the part of the immature and teaching on the part of the society into which they are born. The plasticity of childhood is the platform of man's freedom. For it is not, as Locke and the older psychologists supposed, the plasticity of wax:

Wax to receive and marble to retain,

a passive plasticity to be moulded, impressed, coined by the educational mint-master. It is a plasticity comparable with, though vastly more complex than, the plasticity of the delicate tendrils of the vine straining upward towards the light and the air, and ready to seize upon any kind of support in its ascent. It is the plasticity in virtue of which, as the poet says, we feel

. . . through all this fleshly dress  
Bright shoots of everlastingness.

It is, in short, the plasticity of infinite potentiality.

The quality of any given civilization is to be measured by the number of years it allots to this period of plasticity and the proportion of the population permitted to enjoy it. If we shut our eyes to its slaves, Athens in the age of Pericles, with its compulsory education from six to fourteen, and its

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voluntary though well-maintained secondary education up to eighteen, to say nothing of the more-or-less compulsory gymnastic training right up to the age of twenty, passes the test well enough. We have even yet not reached that standard, though we are struggling up to it. And the Greeks were ahead of us in another respect, namely in their conception of education. If immaturity is to be preserved from the cares and occupations of adult life, it must be hedged about and provided with special occupations appropriate to itself. As man develops, therefore, from savagery to civilization, the education of his young is not merely prolonged, but becomes more formal and more deliberate. In other words, schooling is insisted upon with ever-increasing emphasis. Now, the word "school" is of Greek origin, and we can never too often remind ourselves that σχολή means "leisure," "a time for play"; in fact, just that "idleness" which the educationalists of yesterday, with their admiration for the insect, regarded as the special opportunity of the devil himself. And what we know of the Athenian schools goes to show that the connection between schooling and leisure was no mere etymological accident. Without either biology or psychology, as we understand those sciences, the Greeks possessed a far more complete recognition of the claims of human immaturity than any modern nation. There are, as we have seen, two main elements in the educational process: the element of play and the element of deliberate preparation of the young by society or its representatives for the responsibilities of adult life. The schools of Hellas, while not

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sacrificing the latter, gave free scope to the former, in a fashion never since equalled. Young Athens was educated through play, the body-play of gymnastic and the mind-play of poetry, music and art. This was the foundation upon which she built the greatness of her adult life, and, if we desire a similar greatness, we must build in like manner. But when we do, we shall start with an advantage which the Greeks lacked. We shall have no slaves; and that means not only the social advantage of rearing the total child population together, but also the very great psychological advantage of being able to make use of the manual operations of adult life (carefully selected, of course) in the school.

The possibilities, therefore, of the future mental evolution of the race seem to depend upon three factors: an extension of the period of plasticity, the provision of a full measure of schooling to all the children of each generation, and a recognition of the significance of play, expressing itself through sport and art, in education. And the complexity of the educational situation of our own day consists in just this: that all three factors are pressing upon us for acknowledgment at one and the same time. It may perhaps help us to understand this situation better if we consider for a few moments how it has arisen.

With primitive peoples, the only education of a formal character is to be found in their initiation ceremonies, involving severe tests of endurance, together with instruction in the customs and ideals of the tribe—ceremonies by which the boy became man and was admitted into full social membership. They are highly significant historically, since they

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furnish the earliest example of schooling, of an educational institution deliberately established by society to perpetuate its life and preserve its tradition. With their tests of endurance, their conscious transmission of culture, their intimate connection with tribal religion, they possess all the main features which distinguish the educational systems of the modern world, though, of course, they are but the germs of such systems. On the other hand, the true education of the primitive child lay quite outside these brief ceremonial acts, which belonged to one period of life alone, and is to be found in the informal education by experience, which he acquired merely from living with adults, sharing in their occupations and catching their spirit.

Turn now to a society, like that of the middle ages, lying somewhere about half-way between savagery and modern civilization, and you find education stratified in an interesting way according to vocation. At one end of the intellectual scale were the agricultural labourers and village craftsmen, who formed the vast bulk of the population and for whom no education was thought necessary beyond the informal domestic type just spoken of. At the other end were the clerics, for whom alone schooling, in the strict sense of the word, was provided, until the rise of commerce led, in the fourteenth century, to the beginnings of commercial education. In other words, scholastic education was primarily intended for, and for long confined to, those upon whom the burden of preserving and transmitting the culture of Christendom mainly rested. In older civilizations, such as those of Egypt and Babylonia,

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the relations between formal education and the priesthood had also been very close, for the simple reason that the priesthood was that section of society in which society was most conscious of itself; the social mind was, so to speak, in its keeping. The clerics of the middle ages, however, were not merely priests, but bureaucrats, and as time went on the bureaucratic task absorbed more and more of the best intellects in the Church, who were prepared to forego the privileges of full priesthood if they might wield secular power. Laymen, indeed, wore the crowns of Europe ; but without the clergy the State would have been impotent, since it was clerics who controlled the civil service, the law, and administration generally. They were, in fact, the " guardians " of whom Plato had dreamed in *The Republic*, a professional caste, free " from all those quarrels which are occasioned among men by the separate possession of money and children and kindred,"<sup>1</sup> and, in theory at any rate, living solely to serve the great society which they controlled. It was an immense experiment in the evolution of man, this emergence of a professional class specially devoted to public service, and like all great developments in the sphere of social formation it was accompanied by an equally important advance in the sphere of education. For in the grammar school and the university, the middle ages gave us the most deliberate, the most specialized, and the most highly articulated educational organs that man had yet produced, the twin institutions round which the modern European systems are built. Yet these

<sup>1</sup> *The Republic*, v. 464.

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institutions were informed with a one-sided ideal. The education they provided necessitated a lengthy training from early years to full manhood, and therefore involved for those who pursued it a period of immaturity more prolonged perhaps than any previous society had known. But against this must be set the complete absence of any recognition of the psychological needs of the plastic period. The instruction was almost wholly intellectual, *i.e.* of a kind adapted to adult minds. The element of preparation was all-important; that of play nowhere.

Beside the peasant and the cleric there were the craftsman and the noble, each with an education appropriate to his vocation. The knight (together with his sister) attended no school, but his education was nevertheless deliberate in character, seeing that he left home at about seven years old, and was boarded out with other boys and girls at the castle or manor of some great feudal lord, in order that he might be trained to arms, to courtesy, to dance and song, and often, especially towards the close of the middle ages, to what we should now call "polite letters." But the chief aim of the education of chivalry was conduct and character, not learning; prowess in the field, whether of sport or war, and *devoir* in hall or bower, not scholarship or statecraft. It was, in short, the education of a leisured class, "of the free-born way of life" as a fourteenth-century writer described it. That those who alone maintained the liberal traditions of the Greek σχολή should never have attended "school" at all, furnishes a significant comment on the scholastic education of the middle ages. Equally significant is it that the

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Renaissance, when it came, was a development not of scholasticism but of chivalry, and drew its nourishment from the courts of princes rather than from schools and universities.<sup>1</sup> Finally there was the education of the craftsman, which, like that of the knight, was seldom completed before the age of twenty, and usually involved a lengthy period of residence away from home. Apprenticeship, which was, of course, the domestic type of education of the peasant made more formal and deliberate to suit crafts more specialized than agriculture, did not necessarily entail any book-learning or school attendance. But with the industrial and commercial developments of the later Middle Ages, some preliminary elementary schooling, involving at least the reading and often the writing of the mother tongue, seems to have been increasingly expected of young apprentices.<sup>2</sup>

Thus mediæval Europe, because of the very rigidity of its social structure, was able to provide four distinct types of education, each with its special social function, and each developing the human mind in a particular direction: scholasticism, the preparation for professional life, which, with its curriculum of the seven (so-called) liberal arts, and its emphasis upon dialectic, constituted the most strenuous training of an intellectual kind that the race had yet devised; chivalry, the education of the gentleman, which, concentrating upon physical and artistic skill, gave expression to the play-activity of body and mind in a fashion unrivalled since Greek

<sup>1</sup> J. W. Adamson, p. 282 of *The Legacy of the Middle Ages*.

<sup>2</sup> J. W. Adamson, *Short History of Education*, pp. 77 *et seq.*



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days; the manual education of the folk, an education by experience, an education unformalized, largely unconscious, hardly if at all intellectual; and lastly apprenticeship, a manual education of a special kind, demanding a considerable period of training before full maturity was acknowledged, and as time went on, more and more infused with intellectual elements, and yet never education in the complete sense of the term, seeing that it implied the specialization of the individual while still in the plastic period. As a matter of fact, specialization was the defect of all four types, inasmuch as all of them were purely vocational. Indeed, what was, from our point of view, wrong with the whole mediæval system was just that which had made these educational experiments possible, namely, its specialism. We have seen that man's place in nature is due to his rejection of the specialization, first of his limbs and later of his instincts. During the Middle Ages a new specialization threatened him, in the apparent interests of social stability, namely, the specialization of his habits and sentiments by means of a specialized education, and in preparation for a special vocation. Since that time the Industrial Revolution has carried forward the specialization of vocation to a pitch which would have been inconceivable to the craftsmen of the fourteenth century, but happily no corresponding specialization of human personality has accompanied it. On the contrary, the tendency has been all the other way. The increasing complexity of modern society has led men to value ever more and more human plasticity. And looking back across the interval of five hundred years, we can

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now see that if the human race was to reap the full benefit of its mediæval experience, it had to accomplish two things: first, to elaborate a new and more complex type of education, which would combine the intellectual, play and craft elements of its mediæval predecessors, and so develop the mind of the individual on all sides; and, secondly, to make such an all-round education available to every child of man born with a mind capable of education and for the whole period of human plasticity.

Neither task has as yet been completely carried through. A beginning was made with the former in the twin movements of the Renaissance and Reformation, which broke up the specialized society they found by dethroning the clerical bureaucracy from the seat of authority and setting up in its place the lay aristocracy, which, emerging from its thousand years of tutelage by the Church, now declared itself competent to interpret the scriptures, determine the law and administer the State unaided. At first the change seemed to threaten the very existence of institutional education. The aristocracy clung to the mediæval custom of rearing their children at home (their own or others), though they now required the assistance of a tutor which the Renaissance had rendered necessary. Grammar-school and university, therefore, no longer the training ground of a civil service, sank into a state of lethargy and decay from which they did not awaken until the nineteenth century. This awakening was caused by the spur of urgent national necessity. An education appropriate to the J.P.'s who carried on the work of the State in the simple empty England

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of the eighteenth century was wholly insufficient for coping with the problems which imperial expansion, industrial revolution, and, above all, an enormous multiplication of the population, brought upon us. For the work both of political and social organization at home and of colonial development overseas, a highly trained army of professional men was required, and, as the nineteenth century advanced, the standard of social efficiency rose, so that there was no falling off in the demand for brains in the public service. Equally great and insistent was the demand on the Continent, where the rise of highly organised military States, inspired by mutual hostility, covered Europe with rival official hierarchies, military or bureaucratic. All this spelt "secondary education" as our grandfathers learnt to call it, but which would be better named professional education, seeing that it was, like the clerical education of the Middle Ages, designed for the needs of a governing class, a class which was far more socially exclusive and self-contained than the mediæval bureaucracy had been. Both in France and Prussia, for example, up to the beginning of the Great War, secondary schools were so much the preserve of the official and aristocratic class that it was practically impossible for a clever boy from the State primary school to pass into them; and though matters were better in this country, the educational ladder was, and still is, like Jacob's, a ladder let down from above. Once again, therefore, it seemed as if society, or rather the rival societies into which mediæval Christendom had split up under the stimulus of nationalism, was to organize its education upon vocational lines. Certainly the

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secondary education of nineteenth-century Europe was, in large measure, a revival of the scholastic, bookish, grammar-school education of the middle ages; for the names "lycée" and "gymnasium" only serve pathetically to emphasize the difference between the barrack-like buildings they belong to and the gardens, fields and woods which formed the scene of Greek secondary education. In England alone, as we shall see, did the play-element find recognition, generous enough on the side of manly exercises, but still inadequate on the side of the arts. For the "public schools," the revival and multiplication of which during the nineteenth century were the first response of the nation to the requirements of the new public service, were the heirs both of the castle and the grammar-school. They represent an attempt, and in many ways a most successful attempt, to combine two of the three separate strains in mediæval education, the chivalric and the scholastic, an attempt that the municipal secondary schools, which followed on the Education Act of 1902, and which constitute the second national response to the needs of a trained administration and a teaching of service, are doing much to carry forward among ever wider social circles. The inclusion of the third element, that of craftsmanship, has to wait upon the accomplishment of the second great task which the Middle Ages left us, the provision of education for all and for the whole period of human plasticity.

The education by experience, which was all that most mediæval craftsmen received, lasted well on into the nineteenth century for the majority of Englishmen, though Cobbett was beginning to

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celebrate its departing glories at the end of the eighteenth. He himself had been reared according to its principles, and it may be worth while to pause a moment to glance at the vivid picture he gives us of it. "I do not remember the time," he writes, "when I did not earn my living. My first occupation was driving the small birds from the turnip-seed, and the rooks from the peas. When I first trudged a-field, with my wooden bottle and satchel swung over my shoulders, I was hardly able to climb the gates and stiles; and, at the close of the day, to reach home was a task of infinite difficulty. My next employment was weeding wheat, and leading a single horse at harrowing barley. Hoeing peas followed, and hence I arrived at the honour of joining the reapers in harvest, driving the team and holding the plough. We were all of us strong and laborious, and my father used to boast that he had four boys, the eldest of whom was but fifteen years old, who did as much work as any three men in the parish of Farnham. Honest pride, and happy days!"<sup>1</sup> Now the most striking point in this description of the childhood that the majority of our ancestors enjoyed, and if Cobbett is to be believed actually enjoyed, is that we can hardly recognize it as childhood at all. Dependence, immaturity in every sense but immaturity of bodily strength and stature, seems to be absent from it. "I do not remember a time when I did not earn my living." Standing up meant growing up, while immaturity and infancy were coincident. Nor was this condition of affairs confined to the agricultural popula-

<sup>1</sup> G. D. H. Cole, *Life of William Cobbett*, p. 16.

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tion. Witness the famous account by Crompton, the inventor of the spinning-mule, of his employment by his mother all day and every day, as soon as he could walk, to tread down the rovings of cotton wool in a deep earthenware tub full of soapy water; or the still more famous passage from Defoe's enthusiastic description of the Yorkshire woollen industry in 1730: "The houses full of lusty Fellows, some at the Dye vat, some at the Loom, others dressing the Cloths; the women and children carding or spinning, all employed, from the youngest to the oldest: *scarce any thing above four years old but its hands were sufficient for its own support.*" And this economic precocity was paralleled by an intellectual precocity which was commonly expected, and sometimes found in other ranks of society. John Evelyn's paragon, who, his father records, evinced "a strong passion for Greek" before his fifth year, reaches out hands of fellowship in affliction from the seventeenth century to little John Stuart Mill, who, in the nineteenth, had the misfortune to be the son of the most eminent psychologist of the period.

The history of the idea of childhood is a subject which stands in need of investigation. How came it that the notion of children of four or five earning their own living, or becoming learned classical scholars, which seemed natural or even admirable to Defoe and Evelyn, had, by the end of the nineteenth century, grown to be abhorrent, almost inconceivable, to ordinary men? The change is, I suppose, usually attributed to late eighteenth-century educational writers like Rousseau and Pestalozzi;

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but such men were symptoms, not causes; and, moreover, they were far from being first in the field. The sanctity of childhood had been proclaimed in no uncertain terms by the Founder of Christianity, and though the Middle Ages forgot or ignored this part of the Gospel, English poets of the seventeenth century, like Vaughan and Traherne, rediscovered it, by way of the neo-platonic philosophy, hailed it with delight, and handed on the newly lighted torch to Wordsworth, who, in this regard, is at least as important a figure as his contemporary, Pestalozzi. In England, however, at any rate, the conversion of the ordinary person, or, more pointedly, the ordinary parent, was effected not by the writings of educationalists or poets, but by that mysterious movement of sentiment, known as humanitarianism, which, spreading like some beneficent epidemic from heart to heart, effected during the first half of last century the two greatest revolutions of the revolutionary period: I mean the abolition of slavery in most parts of the world, under the leadership of Wilberforce, and the emancipation of English childhood from adult occupations, under the leadership, first of Robert Owen and then of Shaftesbury. Whatever the origins of humanitarianism, its character is obvious enough. Like Christianity itself, of which, indeed, it was a revival after the Hebraic reaction of Puritanism, it meant an immense quickening of the sense of human solidarity, of human brotherhood. Man was once again entering upon a fresh stage of his evolution from his humble mammalian ancestry, and the new stage, as ever, embraced both social and educational regeneration. The democratization and

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reorganization of society which were undertaken in the nineteenth century were inevitably accompanied by an extension of the boundaries of human immaturity. And in the twentieth it is beginning to be difficult to see where this extension is to stop. Schooling first became compulsory for every child up to thirteen years of age in this country in the year 1880. Within less than forty years a law appeared on the statute book, not only raising the school-leaving age to fourteen, but envisaging a further period of partial tutelage up to eighteen years. Furthermore, the rapid development of classes for adults all over the country during the last ten years shows that the old dictionary definition of education as "the bringing up of children" is quite out of date. Education, accepted fifty years ago as a necessity for every child, is now felt to be equally necessary not only for the adolescent but also for the adult. It is no longer regarded as merely a preparation *for* life; it is seen to be an essential ingredient *of* life, of life from the cradle to the grave.

And if education be a lifelong process, then human plasticity, its correlative, must be a lifelong condition. Psychology, apparently, is not yet prepared to admit this, and still abides by the dictum of William James, which condemns the race to "old fogeydom" from the age of twenty-five onwards.<sup>1</sup> Biology not only admits it, but recognizes its immense possibilities. "Man has come by the power," writes Professor Julian Huxley—"impossible to any other organism—of leading

<sup>1</sup> See for a discussion of this matter *Educational Theory and Adult Education*, by Prof. Robert Peers (*Journal of Adult Education* I., i.)



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what is to all intents and purposes a multiple existence. . . . He can change his nation or his city; he can belong to a dozen organizations—biologically speaking can be aggregated in a dozen different ways—and play a different part as unit in each. He can follow one profession in the morning, another at night, and be a hobby-horse rider in between. This plastic mind has endowed him with a new biological possibility. He can do what no other organism can—he can be both specialized and generalized at one and the same time.”<sup>1</sup> Such a “multiple existence,” combining the social advantages of specialization with the individual claims of generalization, has only really become possible under the conditions of modern civilized society. Indeed, it has not even yet revealed the full measure of its possibility. In the Middle Ages, as we have seen, the community was organized through the more or less complete specialization of the individual; and our social structure is still to a certain extent mediæval. But democracy, that is to say, the recognition of the right of every individual mind to its own generalized life, is not at this time of day to be gainsaid. His plasticity, his lifelong immaturity if you will, has become man’s most precious possession; for he is learning the biological truth of the implied command: “Except ye be converted and become as

<sup>1</sup> *Essays of a Biologist*, pp. 44-45. Professor Huxley himself drew my attention, after these pages were already in proof, to chaps. ix and x of General Smuts’ *Holism and Evolution*, which not merely express this same point of view, but anticipate the general conclusions of the lecture as a whole in a manner very encouraging to the lecturer.

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little children, ye shall not enter into the kingdom of heaven."

But the prolongation of schooling, or even assiduous attendance at university tutorial classes, is not sufficient in itself for the preservation of the plastic mind, the child-spirit. Almost always in the past, and far too often in the present, what is given the mind to feed upon in school hours is calculated to encourage ossification, to bring on old-fogeydom, in a way that premature wage-earning could hardly better. So long as its children were shut off from the over-specialized life of the factory and not thrown back exclusively upon the demoralising because entirely unregulated life of the streets, society did not at first care greatly what kind of mental life was provided during the hours of school attendance. Or rather, it turned without question to the only kind of mental occupation which had for centuries been associated with school-life, viz., the literary instruction and scholastic exercises that the Middle Ages had deemed necessary for the training of its clerical caste. Every year, however, the old scholastic tradition loosens its hold more and more upon the schools, yielding place to what is perhaps best called, in Mr. Caldwell Cook's phrase, the Play-way. Play entered the field of modern education first of all in the special form of "games." The great educational problem in the residential public schools of England at the beginning of the nineteenth century was revolution. Out of the class-room, the boys had nothing to occupy their minds, and the bolder spirits among them found an outlet for their energies by organizing and

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leading the rest against the constituted authorities of the school. Had these rebellions become linked up with the political life of the nation, as they easily might have been in the 'forties, a dangerous condition of affairs, comparable to that prevailing among the student population of Russia before the Bolshevik revolution, would have been set up which might have changed the history of England. Fortunately Thomas Arnold forestalled such a contingency by introducing organized games into Rugby, and the device was so successful that it rapidly spread to other schools, from them to the universities, and from the universities to the rest of the country. And thus spreading, it did for the country what it had first done for Rugby. Professor Fay appropriately rounds off his lively book on *Life and Labour in the Nineteenth Century* with an account of a football match before a crowd of forty thousand spectators :

“The monster demonstrations of the Chartists and their simultaneous torchlight processions must have been something like this. As you looked into the sea of faces in the gloom of a December afternoon, there was not a second when a match was *not* being struck. What moments of mass excitement! The wings break away, and the hopes and fears of 40,000 men break away with them. The centre forward steadies and shoots. The ball starts low and travels over the bar, dropping on to the rails. The roar of expectancy starts low, rises as the ball rises, and drops in disappointment. The next moment the tension is broken, and the vast crowd splits up into buzzing groups, each explaining exactly how it happened and what should be done with the luckless defaulter. A football match is infinitely more

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exciting than slaughtering Germans or threatening your neighbours with revolution.”<sup>1</sup>

But sport is something more than a cure for revolution and a possible substitute for war; it is the great popular art of modern times, the art by means of which millions receive the only æsthetic satisfaction open to them in our civilization. Arnold, who inaugurated this tremendous and, to my mind, wholly beneficial transformation in social habit, went to Rugby less than a century ago. How feeble did the schools of that time seem as civilizing agents, how much more influential are they to-day! What, then, prevents them from setting on foot movements even greater and more beneficial than that of modern sport? With the coming of games the world recovered an equivalent of the γυμναστική, what we have called the body-play, of Greek education; it still lacks the mind-play, the μουσική or Art. And lacking this it lacks the one thing necessary to turn our energetic but chaotic barbarism into a genuine civilization. This is a large subject. Moreover, it is one that Mr. R. G. Collingwood,<sup>2</sup> who is to address you next week, has made his own. I will, therefore, content myself with a few scattered observations.

First, then, a word concerning the necessity of art. At a time when in every field science is lowering its proud flag in salutation to art, when the scientific

<sup>1</sup> *Life and Labour in the Nineteenth Century*, C. R. Fay, 1920, p. 285.

<sup>2</sup> I may be allowed to refer in particular to his article on *The Place of Art in Education* (*Hibbert Journal*, April 1926).

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conception of the universe is being acknowledged by its chief exponents as substantially incredible, a useful tool for the purpose of discovery but entirely unsatisfying as a guide to the value and significance of life as a whole, I do not need to argue the case.<sup>1</sup> Let me, however, give one illustration, from the present course. Physiology, we have been told, regards mind as dependent upon brain, and human personality as an automatic machine. Now, from the point of view of science as a method of discovery, of physiology as a developing and growing body of knowledge, this conception is perhaps both useful and essential. Nevertheless it represents but a portion of the truth, since it is based upon an abstraction, an abstraction which leaves out all that the poet and the artist, to say nothing of the plain man, see and value in mankind. Mind, moreover, is a serious matter; for what we choose to think about Mind determines our whole philosophy of life, and upon our philosophy of life our conduct is likely to depend. To speak, then, of mind as "nothing but" brain, or of human beings as "nothing but" automata, is not merely to be guilty of misstatement; it is to adopt a very dangerous attitude indeed, an attitude against which all poetry and art is a protest. The dramatist, for example, recognizes the automatic elements in man. He is, indeed, constantly on the look-out for such elements, but for what purpose? To laugh at them. For laughter, as Bergson has reminded us, is provoked in men at the sight of other men acting automatically, and comedy is concerned with persons who make themselves ridiculous by

<sup>1</sup> e.g. see A. N. Whitehead, *Science and the Modern World*, ch. v.

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becoming mechanical instead of human, typical instead of individual; such persons, for instance, as Meredith's Sir Willoughby Patterne, who behaves like one of our prehistoric mammalian ancestors struggling for a mate, while all the while he imagines himself to be the latest and highest product of civilization. And when the poet, in high seriousness, speaks of man, it is upon man's divine possibilities rather than upon his mechanical or generic elements that his attention is fixed.

"What a piece of work is a man ! how noble in reason, how infinite in faculties, in form, and moving, how express and admirable in action, how like an angel in apprehension, how like a god !—the beauty of the world . . . the paragon of animals."

Is this just the ravings of human self-conceit, or is it the expression of a truth, a truth even more important than those of the physiologist? It is different in kind, because it seeks not to explain man but to reveal him to himself. It is, in short, a declaration of faith, rather than the enunciation of a hypothesis; of faith that looks forward to the fruits rather than of hypothesis that discovers the roots. It is, in fact, the faith upon which was founded the greatest civilization since that of the Greeks, namely, the glorious outburst of poetry, art and intellectual activity which we call the Renaissance. The Renaissance, itself an emancipation from the religion, the social structure, the scholasticism of the Middle Ages, all of which had grown mechanical and therefore oppressive, was essentially an assertion of the

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freedom of man. No civilization can be built upon the opposite conception, that of determinism or automatism, because such a notion, however useful in the physiological laboratory, is in the field of action paralysing—a veritable prison of the mind. Shakespeare, who wrote the declaration of faith quoted above, knew this well enough, and even took it as the subject of the play in which the passage occurs. For in *Hamlet* he shows us a young man, originally inspired with the humanist faith, becoming a prey to doubt, doubt that 'after all life is a prison, mind a machine, and man himself nothing but a "quintessence of dust" ; and it is this doubt that unnerves his arm, clouds his reason, brings him and the State for which he is responsible to utter disaster. And if a belief in human nature be essential to the health and development of society, *ipso facto* it is so to education, by which alone society is kept alive. Indeed, it cannot be gainsaid that every great advance in education has been accompanied, if not caused, by a reassertion of the value and possibilities of human personality, which is natural enough when we remember that education itself is the ever-increasing price which man has to pay in his endless path of self-emancipation from the blind action of instinct-ridden life. And if I may offer any excuse for this digression from the main theme of my paper, it is that the young teacher is to-day beset on all sides with temptations to think of men, and especially his pupils, as physiological or psychological machines; the remedy for which malady is not science but poetry and art, for poetry and art alone can be trusted to keep open the cage of the soul.

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There was a time, before the Industrial Revolution, when art belonged to the native heritage of man. But the coming of the machine, which by encouraging a mechanical view of life made art more than ever necessary, banished it from the life of the ordinary man and left it as a kind of ornamental preserve of the leisured classes. Yet, as William Morris remarked long ago, "If art which is now sick is to live and not die, it must in the future be of the people, for the people, by the people; it must understand all and be understood by all." This might be brought about by two means, and by two means alone. The first is education. Art and education are inextricably bound up together. "You cannot educate, you cannot civilize men," Morris declares, "unless you give them a share in art." On the other hand, the re-birth, the renaissance, of art can begin in the schools and nowhere else; partly because industrialism has shut it out of all other spheres of life, but chiefly because æsthetic-like athletic activities must be begun young if they are to mean anything at all. Grown men, who have played no games in boyhood, do not take to athletics; their bodily habits are against it. In the same way the adult who has not, as a child, accustomed his mind to the rhythm of word, sound, colour or line, is likely to be:

One to whose smooth-rubbed soul can cling,  
Nor form, nor feeling, great or small;  
A reasoning, self-sufficing thing,  
An intellectual All-in-all!

Moreover, one of the great discoveries of modern



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education is the almost unlimited possibilities of childhood in the artistic field, whether it be in verse, in painting, or in music. The child is naturally an artist; it would seem that we have only to give him his head and all will be well.

The problem, however, is not quite so simple as this. It is æsthetic activity, not æsthetic passivity, creation not appreciation, we have to encourage. In other words, gazing at Medici prints, listening to Beethoven sonatas, watching performances of Shakespeare at the Old Vic, though very well in their way, should take but a secondary place in æsthetic education, a place comparable to attendance at first eleven or first fifteen matches in the sphere of athletics. The life of art is an active not a contemplative one, and the young artist must be doing things most of the time, and moreover doing things which he feels to be important both for himself and his fellows. And here we come upon the second pre-requisite for that renaissance which Morris proclaimed as the only hope of our civilization, namely, the re-marriage of the arts and the crafts. I do not know that any one, even Morris himself, has put the matter better than did the great father of modern educational theory and practice, Heinrich Pestalozzi, whose centenary the whole world has just been celebrating, and whose reiterated maxim was "Life educates." "Higher artistic training must be subordinated to training for the actual needs of life," he writes. "If, on the other hand, the practical basis of art is forgotten, and attention is given to developing the showy semblance of artistic power, this side of education will lose its

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usefulness. It will be a source of weakness rather than of strength.”<sup>1</sup> Yet though these words were uttered more than a hundred years ago, all is still to do in this field. Somehow there must be recaptured and brought into the schools that ancient joy of childhood before schooling became universal, the joy of which Cobbett speaks, the joy of sharing in the purposes of society and helping to carry them out. The Boy Scout and Girl Guide movements, founded in 1908, have proved agencies of incalculable force in this direction. But their mission lies outside the school walls. How the same spirit may be kindled in the school itself it would now take too long to inquire. I will say but this. The man who has come nearest to its accomplishment was not a poet or an artist, but a scientist—Sanderson of Oundle—a fact significant of much. Listen to some of his words :

“ A modern education, a modern school, is only indirectly concerned with the business of training a boy’s faculties, only indirectly concerned with what is usually meant by teaching. No truly high or noble thing comes by such a direct route. The work of modern education in schools of all grades is to impress into the service of mankind, and the races of man in every part of the world, all branches of knowledge, ancient or modern, all the crafts, and all the capacities, talents, and loves of the individual members of the school—boys and masters. The main purpose of a school is not to teach, but to open the vision to the condition and needs of man; to know something of the evolution of man’s soul and spirit, the drift of his thoughts and ideals. . . . And the great introduction to service which appeals to all,

<sup>1</sup> *Pestalozzi’s Educational Writings*, ed. J. A. Green, p. 313.

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and is possible in one form or another to all, is science and the crafts." <sup>1</sup>

The art of the future which Morris foresaw, the great popular art which will "understand all and be understood by all," and which will come from the schools and give us a civilization finer than that of renaissance Italy, more enduring than that of Periclean Athens, must be rooted in science, because science itself now underlies all the crafts of common life. That is the meaning of the Industrial Revolution—the transference of the crafts from their immemorial basis of custom to the new basis of science. William Morris, for all his genius, could not bring himself to face this fact, and so failed to realize that the characteristic craft of to-day, to which we must look for the chief artistic triumphs of to-morrow, is the craft of engineering. He forgot that Leonardo da Vinci was an engineer, and that the temples of Athens would have been impossible but for the geometry of Greek mathematicians. I would not be misunderstood. I am not now thinking of technical or vocational instruction at all, great as is the importance I attach to them. I am thinking of engineering and other crafts as an integral part of what is called a liberal education, that is, education considered irrespective of the future vocation of the taught. Education should proceed from occupations, not from subjects, and its framework should be, not some paper curriculum, but the common life of the school, reflecting in miniature the great life of human society without. The Industrial Revolution

<sup>1</sup> *Sanderson of Oundle*, pp. 314, 321.

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has transformed and is still transforming the world, and there will be no counter-revolution. Civilization is inevitably and for ever established upon the basis of machine-production. Is it not time that the human mind and especially the mind in education began to adjust itself to the inescapable facts of this situation? Only when it does so will the crafts, which are rooted in science, put forth the fine flower of art.

In the day when this comes to pass it may be that the craftsmen will return to the mediæval practice of annual celebrations whereat will be given dramatic performances of episodes from history or legend symbolical of their various mysteries. In such a day what episode should be assigned to the craft of crafts—that of the teachers? Had I the choosing they should have the best of all. Let me try to depict it for you.

The scene may at first surprise you. It is not a school but a cattleshed, a tumbledown wooden structure, open to one side and with a thatched roof, moss-grown and full of holes through which the stars peep, for it is night. The building is perhaps just worth calling a shelter; only the penniless, the tramp, the outcast would use it as a home; and yet a home it is, as we shall see. Beneath this tenuous roof is staged our pageant, in three groups. There, to the right, are seen (as is fitting) representatives of the lower orders of life, ox and ass, patient beasts, with minds shut up within the prison of fixed instincts and specialized bodies, yet still capable of some education, since they have learnt to serve mankind. To these the group on the left offers a complete contrast, since the three figures

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who compose it seem pioneers of spiritual progress, great leaders in the march of human intelligence and inspiration. Brothers of a common quest, vowed:

To follow knowledge like a sinking star  
Beyond the utmost bound of human thought,

they are, in fact, a triumvirate of kings, holding sway over the triple empire of the human spirit and bearing in their hands the symbols of their sovereignty: the bright gold of Beauty, the bitter, tonic, cleansing myrrh of Truth, the mystic frankincense of Holiness. For the three kings are artist, thinker and saint, high-priests of the highest values known to mind. Their quest is achieved; their star stands still in the sky above; and they kneel to one who is the central figure of the central group and humbly proffer him their precious gifts. This group is a little family—husband, wife and child—just such a family as may be found in the dwelling of any young working-man who has newly set up house. The kings kneel in worship before the child, a child only a few days old, utterly weak and entirely helpless. To Herod's soldier, should he chance to pass this way, it is an object unworthy of his sword, a thing to strangle with the pressure of a thumb; to the physiologist, if curiosity bring him to this hovel, it is a mere purposeless centre for stimuli, a complex of reflex actions, the veriest automaton of human automata; but to the eye that looks *forward*, that judges not by past origin or present powers, but by future possibilities, the eye of a parent or a teacher, the eye of faith and of love, this frail new-born

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body is implicit godhead; this dim new-lighted spirit is, in little, the sun of the universe itself. The wise men worship Childhood, and the whole universe, indeed, seems to be pressing about the stable-roof in adoration, while over all broods in ineffable tenderness the mind behind the universe which we have learnt to know as Fatherhood.

May I give you a text for my Christmas card? It is "Possibility and Parenthood, or mind from the point of view of education."

## ÆSTHETIC

By R. G. COLLINGWOOD, M.A., Fellow of Pembroke College, Oxford.

THE task that has been assigned to me, in this series of lectures, is to consider what light is thrown on the nature of the mind by æsthetic.

Æsthetic, I take it, is the theory of art, and is pursued simply by thinking about art; not by practising art, though that practice is a necessary qualification for thinking about it; nor yet by thinking about the peculiarities of this or that particular work of art, in which case our thought would be art-criticism; but by thinking about art as such, art in its universal nature as one of the elements that go to make up the life of man.

When we speak of art in this connection, we use the term as a generic name for a number of activities like painting pictures, writing poems and composing music. These we call the arts, or sometimes the fine arts, as if to guard against misunderstandings due to the fact that there are other things which we also call arts—the mechanical arts, like metallurgy and carpentry, the liberal arts, like logic and mathematics, or even the arts of government and war. All these uses of the term are respectable and well established; and they have a certain connection with one another. They are not merely cases of the equivocal usage of a word; a continuity of

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thought, a single fundamental idea, runs through them all. The radical idea expressed by the word art, wherever we find it, is the idea of human constructiveness; the idea that man constructs for himself an environment, whether material or spiritual, in which to live. In the mechanical arts he does this in the crudest and most liberal sense. He builds himself a shelter of branches or of bricks; he fashions himself tools of flint or of metal; he wraps himself up in garments of his own devising. In the civil and political arts, of which government is the grand example, he constructs for himself a system of precepts, an environment of laws and regulations, which fence round and limit his will very much as house and clothes fence and limit his body, and for the same reason: because in both cases he recognizes that these self-imposed restrictions give him just that degree of concentration which is necessary to successful activity. In the liberal arts, he constructs a system of thoughts intended to control and concentrate and thereby facilitate the working of his intellect—a battery of purely mental weapons like the multiplication table and the rules of the syllogism. And in the fine arts too, it is clear enough that he surrounds himself with certain products of his own constructive energy, which we call, in the special sense of the term, works of *art*.

Thus in its widest sense art means the spontaneous constructive power which we recognize ourselves as possessing. It is unlike the power of cognition, in that cognition seems, whether rightly or wrongly, to consist in the mere observation of ready-made objects



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which it finds in existence and leaves precisely as it found them. It differs from the power of action, in that action seems to imply nothing more than an adjustment of ourselves to our environment, and not necessarily an adjustment of the environment to ourselves. If, finding myself cold, I move into the sunshine, that is action; if I light a fire, that is art.

In saying that man is able to construct an environment for himself, we generally assume the existence of an environment which he does not construct, but simply finds; an environment not due to art, that is, to his own activity, but to some cause outside himself and not under his control. This other environment is what we call nature. The word nature, as everybody knows, is used in a perplexing variety of senses; but as in the case of the word art, these senses are connected by the thread of a constant underlying idea. This idea is that of independence upon our own activity. For instance, we say that you cannot change human nature. Of course you cannot; human nature just means that part of man which the arts of education, government, and so forth did not create and cannot affect. We say that nature can only be conquered by obeying her. Quite true: natural forces are those forces which human art cannot alter, and, therefore, it must adapt itself to them, not them to itself. We say that a sculptor or architect must understand the nature of his material; this means that though he can manipulate it in certain ways, within certain limits, there nevertheless are limits, and the limits are different for different kinds of material. Nature, in every case, means something that limits our constructive activity,

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our art; and we can only discover the nature of anything experimentally, by finding out for ourselves what we can do with it and what we cannot. If a person had never tried to make anything, he would not possess the idea of nature; for that idea can only be acquired by trying to manipulate objects and finding that there are certain ways in which we cannot manipulate them. Nature in the widest sense is the opposite of art in the widest sense; and this is why our scientific knowledge of nature is so largely derived from experiment.

The various activities which go by the name of arts, then, are all forms of making; their common character is to be constructive. Now it is easy to see that certain kinds of construction are guided by certain specific kinds of purpose. If I construct a fireplace, I am doing so with the purpose of using it in order to make a fire; if I construct a path in my garden, I have in my mind the purpose of walking across the garden without getting muddy. In both cases I have a definite end in view, and my construction is undertaken as means to that end. In other words the construction is essentially something useful. Now are all constructions useful, or not? All those which are due to the mechanical arts are so, or at any rate they are meant to be; for even if an unscrupulous manufacturer sells razors that will not shave, the people who buy them think they will shave, and to the manufacturer they are useful, so far as their sale yields him a profit; and even if they do not actually pay, he only puts them on the market because he thinks they will. The liberal arts, again, are useful in so far as by learning

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the multiplication table we become able to multiply quickly and accurately; and multiplying quickly and accurately is useful in a thousand ways, to the engineer, to the banker, and so forth. But if a child builds a tower of toy bricks, is *that* useful? It may be, no doubt; it may be knocked over in the middle of the night by a burglar, and alarm the household; or it may serve to develop in the child a talent for architecture which will, later on, bring him in a livelihood; but these and all other utilities which it may possess are accidental, in the sense that they do not enter into the mind of the person who constructs it in the shape of motives for the construction. They may be present to his mind, but only as a play of fancies irrelevant to the activity itself; and when the activity is at its best and most intense, they are wholly absent. Contrast this with the making of a fireplace or a path, in which every operation is controlled by the thought of the use to which it is to be put.

The same absence of utility is visible in certain other forms of construction. In writing a poem, a poet is constructing an object, and the object is intended to form part of his mental environment and the environment of what we call his public—the people who read his poems. Now a poem, like a child's toy tower, may be useful. It may, like *Paradise Lost*, bring its author the sum of five pounds. It may, like Pippa's song, bring sinners to repentance. Or it may, like the *Antigone* of Sophocles, induce a grateful nation to give the poet a high command in the army. And certainly results like these may be present to the poet's mind as he works;

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or rather, in the intervals of his work; for when he is really working it is not possible for him to be thinking of such things at all. A man may be led to write a poem by looking at his pass-book and saying, "Heavens! I must do something to wipe off that overdraft"; but if, while he is actually writing a poem, he keeps thinking of its market value, the poem will be a pot-boiler, that is to say, not a poem at all but a fraudulent imitation of one. I do not say that he must forget his overdraft; on the contrary, he may write a poem about his financial difficulties which, if he is as good a poet as Chaucer, may be as good a poem as Chaucer's "complaint to his empty purse"; but a poem about an overdraft is not the same thing as a poem designed to remedy an overdraft. The poem succeeds in being a poem only if the intention of wiping off the overdraft is subordinated to the intention of writing a good poem; and no one who is at all acquainted with the writing of verse can fail to see that when Chaucer was actually composing the exquisite refrain—

"Beth hevy again, or elles mote I die,"

he was at the moment far more interested in the perfect flow of his line than in ways and means of refilling his purse.

The fine arts everywhere show this absence of utility as a governing force in their constructive work. They construct, and their constructions often look as if they might be very useful: a thing so cunningly put together, we feel, must excellently serve some purpose if only we could discover what the purpose is. But of all the fine arts this is uni-

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versally true, that the cunning shown in their work is never directed towards an ulterior end: and this purity from any touch of usefulness is just what makes them fine. All art is not fine art, and many arts that are not mechanical have a purpose to serve and aim at utility; thus a sermon is literature and therefore art, but it is not fine art, because it has an ulterior aim; it is designed to instruct and to improve; it is, therefore, not pure literature, not fine art, but rhetoric. A poster is art, but not fine art; it is designed to advertise, and therefore it, too, must be called a kind of rhetoric. Yet no doubt a sermon or a poster may contain passages in which the didactic or rhetorical function is forgotten, and in which the work becomes for a time pure literature or pure painting—passes, that is to say, from the sphere of rhetoric to the sphere of fine art. And, no doubt, a vast deal of so-called fine art is partly or altogether rhetorical; intended deliberately to teach or to excite or to persuade. Much art quite frankly aims at the stimulation of feeling in its audience; a feeling of convivial hilarity, as in the pictures that illustrate a Christmas number, or a feeling of sympathetic melancholy, as in the kind of art technically known as sob-stuff, or a feeling of optimism as in parts of Browning or of pessimism as in parts of Mr Thomas Hardy. Indeed, the intention to stimulate emotion is so common, that the commonest of all errors about art is the definition of it as stimulating, or as it sometimes absurdly called communicating, emotion. I say absurdly, because of the suggestion that feelings can be laid on by means of a pipe from one person to another, or transferred

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from man to man like an umbrella or a pair of old boots, whereas it is obvious that every man's feelings must be personal and private to himself, and must grow up entirely within his own mind, under whatever stimulus. It is significant that the theory of art as stimulating emotions should be advocated by people with whom art is largely a weapon of propaganda—people like Tolstoy and Mr Bernard Shaw. Such people are specialists in what I am here calling rhetoric, and not unnaturally give us a definition of rhetoric when we ask for a definition of fine art.

Of fine art, then, Oscar Wilde's epigram is true, that "all art is quite useless"; or, at any rate, that if it is useful, its utility is a mere accident and no part of its essential<sup>1</sup> nature. And if one feels reluctant to accept such a principle, the reasons for this reluctance may be of various kinds. One may be influenced by the feeling that what is useless has no business to exist. This may persuade one that, since art is obviously a good thing, it cannot be useless; or alternatively that, since it is useless, it is a morbid and undesirable thing. But utility is not the only merit which a thing may have. The business of a work of art is not to be useful, but to be

<sup>1</sup> Essential *qua* work of art. *Qua* manifestation of human activity, a work of art has the characteristics not only of art as such, but of all those things which go to the making of human activity. Every work of art, therefore, displays knowledge, possesses utility, expresses a moral attitude to life, and so forth; but these are its non-aesthetic values. I need not, I hope, apologize for using the term "art" in this lecture to mean "art as such"; but I add this footnote in case a reader may be perplexed.

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beautiful, if beauty is the right name for that peculiar quality which constitutes the value of a work of art; and to call art useless is only to say what it is not, not what it is; to give a negative description where we want a positive. What, then, are the peculiar qualities which, under the name of beauty or any other name, make a work of fine art what it is?

Let us try to answer this question in the light of the fact, which I stated at the beginning, that art in its broadest sense means human constructiveness. If that is true of art in general, it is true of fine art in particular; and it will, therefore, be at least a part of the definition of a work of fine art, that it is something constructed. Something which is visibly and strikingly a work of fine art will, therefore, be something visibly and strikingly characterized by what I may perhaps call *constructedness*.

Suppose now that I am looking at St Clement Danes, and that I see it not as an obstacle to traffic, or as a piece of valuable property, but as a work of art. Can it be said that, in appearing to me as a work of art, it is essentially appearing as something constructed?

It surely can. When I say that St Clement Danes has to me a constructed sort of look, I do not mean that I see it to bear the marks of masons' tools; I mean that I see it as a well-thought-out system of lines and masses, line supporting line and mass balancing mass, holding itself together by its own self-supporting strength. I do not, again, mean that in looking at the church I am working out in my head any formulæ for the strength of materials

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and the distribution of stresses; I mean that I *see* the balance and harmony of the building without necessarily *understanding* them at all. I am not seeing the physical forces, but I am seeing an arrangement of parts which has actually been arrived at by the architect through his understanding of those forces; and the beauty of architecture undeniably depends on the success with which its forms emerge as solutions of physical problems. But to the spectator, the problem need not be present: what is beautiful to him is the order and balance of parts which results from its successful solution.

A church, then, has beauty—the kind of beauty which a building can have and always ought to have—not because it is encrusted with ornament, not because it is charged with emotional associations, but because it is an ordered and harmonious system of lines and masses, or in other words because it looks and is constructed. But the same is true of any work of art: for instance, a tune. A tune is a group of notes forming an ordered and harmonious system in which every note plays a part of its own, indispensable to the whole. The tune's beauty is just its constructedness; for the tune itself is nothing but the various notes and the relations between them; and any clumsiness or ugliness in the tune will be found to result from an irrelevance or lack of just relation between one note and the rest. The notes have to support each other, somewhat as the legs of a tripod support each other; for a tripod, too, is a work of art, and a work of fine art if its only purpose is to be a tripod; the balance and mutual



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support of its parts give it a very real though an elementary kind of beauty, the beauty of visible poise and firmness.

If we ask who is to judge the relevance of the parts or the justice of their relations, the answer is, anybody whom it may concern. If ten people are listening to a tune, they must all judge for themselves whether it is a good tune, or, indeed, whether it is a tune at all; I mean, each must judge for himself whether the tune hangs together, forms a complete and organic whole, or merely wanders about aimlessly. But when I say everyone must judge for himself, I am not appealing to any one's feelings. Nothing can be sillier than to judge works of art by the feelings with which one contemplates them. I can easily be made to cry by plays of a certain kind; but I am not so foolish as to argue that therefore that kind of play is either good or bad. In calling a play good or bad I am saying that it does or does not form a coherent and self-contained whole in which every part stands to every other in exactly that relation which alone can maintain the balance and unity of the whole. If this seems obscure, let me take one or two instances. The huge *coda* to the first movement of Beethoven's fifth symphony: is that a success or not? Wren's towers at Westminster: are they good work or bad work? I do not propose to discuss these questions; I only wish to point out that any genuine answer to either must begin by envisaging the fifth symphony or the Abbey as a self-contained whole, and go on by considering whether the part in question performs its function in such a way as to promote

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or to impair the wholeness and self-sufficiency of the work.

This constructedness, this wholeness or self-sufficiency, is not peculiar to works of fine art. A machine must have exactly the same quality; every part must be so designed as to perform just the function required of it and unite with the rest into a balanced and smoothly-working system. Again, a scientific theory is a whole of parts, every one of which must be not merely compatible with the rest, that is, not logically contradicting the rest, but actively harmonious with the rest, serving to explain and complete those aspects of the theory which the other parts express. But a machine is more than a self-contained whole: for its purpose is to be useful, that is, to fulfil ends outside itself. And a scientific theory, also, is more than a self-contained whole; for it has to harmonize not only with itself but with all knowledge relevant to it. A work of fine art, on the other hand, has not, as such, these references to anything outside itself; its own internal structure is all it has and all it wants.

From this, an important corollary follows. Everything may be treated as a work of fine art by the simple process of ignoring its references to anything outside itself. Take a machine, and ignore the question what it is for; confine yourself to regarding it as a skilfully-designed whole of parts; and the machine there and then becomes a work of fine art, and appeals to you as beautiful, or, if it seems a clumsy and lopsided whole in which the elements work against one another instead of with one another,

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as ugly.<sup>1</sup> Take a scientific theory, and ignore the question whether it is true: treat it simply as a collection of ideas dovetailed into one another and forming a closed system, and you find it appearing as a work of fine art and presenting you, in place of truth, with beauty. And exactly the same thing happens with natural objects. We can take a crystal or a mountain or a landscape and treat it as a self-contained whole, an individual system of relations fused into a unity which refers to nothing outside itself. So contemplated, nature is invested with the characteristics of art; we have exercised our human constructive powers upon it just to the extent of erecting into a self-contained individuality something which in itself is merely a scrap of the infinite natural world. Then, and only then, we see nature as beautiful.

Everything becomes a work of art by being cut off from its surroundings and treated as an individual whole. And this fact is easily verified in practice. Why do we frame a picture? Because we want to cut it off from its surroundings and see it as merely

<sup>1</sup> A misunderstanding may arise here. I may be told that a locomotive or a ship appears beautiful in its efficient and triumphant performance of its function: that if you forget "what it is for," you lose its beauty. I agree that visible speed and power are factors in the beauty of a locomotive; but I deny that they are "what it is for." Its function is to pull a *certain* weight under *certain* conditions at a *certain* pace; that is, to recognize its function means recognizing and formulating a considerable number of technical engineering problems. Its beauty can be appreciated by a person who does not know, or is at the moment ignoring, the engineering problems whose solution alone enables it to discharge its function, *i.e.* to compete successfully with other locomotives.

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itself. Why does a landscape painter use a mirror or frame a scene in his hand, or in extreme cases look at it between his legs? Simply to isolate it. So we frame a drama in the theatre, with the footlights between it and ourselves; we frame a symphony in silence, so that the slightest noise in the hall jars on us, not because it prevents us from hearing the symphony, but because it forces us to bring it into relation with other sounds; we choose as subjects for art themes of long-ago and far-away, in order to preserve intact the charmed circle that must separate the work of art from our present interests, and we recognize that if actual emotions are brought into a work of art they must be "distanced"<sup>1</sup> by being recollected in tranquillity or transferred to imaginary persons or the like. We all recognize that a piece of life torn bleeding and raw from its context is not a work of art; if you ask how to turn it into a work of art, the answer is, frame it; bind up its loose edges and turn all its references inward upon itself, and you will have your work of art.

This is the principle of the picture-frame; and, properly understood, it is the fundamental principle of all art. Not only of fine art, but of all art, of everything constructed by man. A theory may or may not be true; but in order to be true it must first of all be something, it must be a definite theory, not a confused tangle of jarring thought-particles. It must be a self-contained system, a work of art, made out of thoughts. Only when it has achieved

<sup>1</sup> *Psychical Distance as a factor in art and an æsthetic principle*, by E. Bullough, in *British Journal of Psychology*, vol. v. (1912).

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this self-contained individuality can it have a reference to other things and so be either true or false. A machine may or may not be useful; but in order to be a machine at all it must be an individual whole of parts each well designed and well constructed to take its share in the system of movements. The machine must first appear within a picture-frame to the designer's mind, otherwise it will never reach the point of doing its work well or ill, for it will do no work whatever. A poster is intended to persuade; but until it is well enough designed to strike the eye as a self-contained and individual whole, it cannot even begin its work of persuasion. The same thing is true of a sermon, an income-tax form, or a word of command. What then is the difference between art and fine art ?

My answer to this question will, I am afraid, seem paradoxical. We are generally inclined to think that fine art is art with something added to it—art *plus* fineness or beauty. The truth seems to me to be the opposite. Fine art is art pure and simple, fine or beautiful just in this purity; art, in the sense of mechanical art and so forth, is art *plus* utility, art in which the picture-frame has been broken through in order to connect the picture with the outside world. To break the picture-frame is to break the spell of beauty, to establish relations between the work of art and other things, and thus to pass from the attitude of fine art, the artist's attitude, to the attitude of the engineer or scientist.

If this is true it follows that all art, all human productivity, begins with fine art. Whatever we make, however useful or pleasant it may end by

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being, has to begin its life by passing through a phase in which its only being is the being of a work of art, and its only merit beauty. And our constructions are not merely things like houses and bridges and swords. A theory is equally a construction; all our knowledge is achieved by the building up of systems of judgments or beliefs, or, if you like, by the gradual apprehension of more and more truths or facts—for my point will apply equally to a realist or an idealist theory of knowledge—and all such constructions of judgments or groups of truths must be apprehended as individual wholes endowed with beauty, before they can be examined in their relation to other facts or judgments in order to test their truth. And the same is true of action. Whenever we plan or undertake an action, we must first think what it is that we are proposing to do; we must first, that is, contemplate the action as an individual whole, before we can reasonably decide either to do it or not to do it. But alike in all three cases the preliminary stage is the stage of art in the strictest sense, fine art.

And this at any rate is no paradox; it is a fact that we all recognize in every-day speech. We all know that the work of the artist consists in using his imagination, and that the whole business of an artist is to be imaginative. And we also know that a scientist without imagination is a scientist sterilized, a scientist with no power of initiating new scientific ideas or of discovering hitherto unknown laws; and that a man of action without imagination is a man who acts in the dark, a mere blind force, not active in the proper sense of the word at all, but

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the dupe of his opponents and the plaything of circumstance.

But, I may be asked, reasonably enough, where have I implied that art is imagination? I implied it in describing what I called the picture-frame principle. Suppose yourself to be looking at an object properly framed, not merely with a physical frame, but with a psychological frame; I mean, with a complete absence of reference to anything outside itself. The thing at which you are now looking is not, by you, being regarded as one of the pictures in the National Gallery; you have forgotten the National Gallery and the rest of the pictures in it, and you are thinking of it alone. I know it is difficult to forget the rest of the gallery, and that is just why picture galleries are such dreadful things; they make it almost impossible to see the pictures in them; but if for a moment you can see the picture *as* a picture, then what I say is true, and you forget everything else. Now, when this happens, you no longer think of the thing you are looking at as one specimen of a class of things called pictures. The very existence of this class has vanished from your mind. You do not think of it as made of special kinds of substance called paint and canvas; these ideas as such have faded from your mind no less completely than the conception of the class of pictures. You do not reflect as you look at the picture, "I have seen things like this person jumping off the chariot, only, as a rule, with more clothes on; they are called human beings; and there are things in the Zoo, called leopards, like those which draw the chariot"; you don't classify the objects in the

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picture, any more than you classify the picture itself. You see the picture as a rhythmical plastic pattern of lines and masses and colours speaking to you with a music of their own, a music which does not depend on your recognizing this note as C sharp or this chord as a dominant seventh. The æsthetic consciousness is a consciousness which does not classify, a consciousness that recognizes no such things as general conceptions. The individual in all its uniqueness, with its own unique physiognomy, resulting from the peculiar relations between its parts, is all that the æsthetic consciousness knows. All this is directly implied in the principle of the picture-frame.

But the extrusion of the general concept from the æsthetic consciousness has a very curious consequence. It is only by thinking in terms of general concepts that we distinguish things as real or unreal; for reality and unreality are themselves concepts.<sup>1</sup> Of course, the thing that we are looking at must be real, or else unreal; for I suppose that, if the character of Hamlet may be described as the object of our contemplation when we read the play, that character must be called an unreal character, the character of an unreal person. But this distinction between reality and unreality is a distinction which

<sup>1</sup> The reader may here protest that I am contradicting myself, because I have placed the essence of the work of art in individuality, and, he may say, individuality is a concept. I reply, with Kant, that individuality is not a concept. That which is unique and self-contained must be, as Kant argues in the *Transcendental Æsthetic*, an intuition, not a concept. Of course, totality is a concept; but the beauty of a work of art reveals itself as totality only to philosophical analysis, not to the æsthetic consciousness.



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the æsthetic consciousness does not make. It contemplates unreal things as if they were real, real things as if they were unreal; and one cannot say either that it regards them all as real, or that it regards them all as unreal, for the distinction is not present to it. Now to refrain from making that distinction is to imagine; and imagination may be defined as a kind of attitude towards objects in which we do not use the concepts of reality or unreality. This is exactly what we do by surrounding an object with the psychological non-conductor which I call a picture-frame; for the reality or unreality of objects appears only in the form of a relation between one object and others. Destroy the relation, as you do by putting a frame round the object, and in the consequent disappearance of conceptual thinking the object is treated as imaginary, even if, in fact, it is real.

It is time I thought of the task that has been set me, and, after this preparation, set about performing it. I have to tell you what lesson as to the nature of the mind can, in my opinion, be drawn from æsthetic. In order to do that, I had necessarily to begin by giving you some account of æsthetic itself—to tell you briefly some part of what I believe myself to have learnt from that study. Now for the application.

We all tend in general to look at the mind as "planked down," so to speak, in a world of more or less alien objects and left there to fend for itself. Its ability to survive and prosper in this alien environment, we think, depends mainly on its power of adapting itself to the things around it; and that again

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depends largely, though not entirely, on its attaining an accurate knowledge of them. No doubt much can be done through instinctive and other non-rational reactions to the outer world; but in the last resort, successful and viable activity on the part of mind must depend mainly on its knowledge of its surroundings. The first duty of mind, then, is to know.

Our efforts after knowledge are impeded by various forces. There is, first, the inherent complexity or obscurity of the things which we are studying; but there is another and a far more dangerous impediment, an impediment within our own minds. When the early Greeks reflected on this problem, they came to the conclusion that the inner impediment consisted of our sensuous nature, which, they believed, constantly puts us off with spontaneously-generated illusions, deceptive appearances, whereas truth belongs exclusively to thought. In the drama of human knowledge, sensation was, for the early Greek philosophers, the villain of the piece. To us this seems strange. The Greeks thought that reality consisted of purely intelligible entities, only to be apprehended by pure thought when the senses were silent; we, on the contrary, think of reality rather as consisting of concrete perceptible objects, to be apprehended by an activity in which sensation plays an indispensable part; for perception, as we understand it, takes place by a kind of co-operation between the senses and the understanding, and might almost be defined as an intelligent sensation—a phrase which to the predecessors of Plato would have seemed a contradiction in terms.

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But the modern view of knowledge as perception, though it has enabled us to get rid of the Greek distrust of sensation, has brought us face to face with a new difficulty. We have ceased to regard sensation as the villain of the piece, only to find ourselves confronted with a new villain, namely, imagination. For imagination is a kind of pseudo-perception—perception of an object which is not really there, and, therefore, not really perception, but something which, unless we are very careful, deceives us into thinking that it is.

Before the rise of modern psychology, we could comfortably believe that imagination, except in a very few morbid cases, was well in hand; and that the danger which it caused to knowledge was in general slight. We could, it was supposed, easily tell on any given occasion whether we were imagining or not. The orthodox seventeenth and eighteenth-century view was that if you were imagining something, and you tried to stop imagining that and to imagine something different, you found that you could do so; whereas if you were perceiving, say, a red rose and tried to make it come blue, you couldn't do it. But modern psychology, as developed in the nineteenth century, changed all that. You need not, it was discovered, be a lunatic in order to perceive things that weren't there, under the influence of suggestion, or to be in a permanent and absolutely incurable state of confusion as to the exact boundary between what you saw and what you imagined. Simply opening your eyes and exercising reasonable care, which to a Locke or a Berkeley seemed sufficient for discriminating between fact and fancy, was found

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utterly inadequate, and it was realized that what we generally regard as fact is to an enormous and unverifiable extent composed of fancy. If to possess an ungovernable imagination is to be mad, then we are all more or less mad; it is only a matter of degree. Indeed, one distinguished nineteenth-century philosopher went so far as to suggest that we were all quite mad, but that fortunately in some cases our hallucinations happened to correspond with the facts. How he knew they did so, remains a mystery.<sup>1</sup>

This was bad enough, but worse was to follow. On the basis of this nineteenth-century psychology arose, in the present century, the psycho-analytic school, showing that there is method in this madness: that the particular hallucinations to which a person is subject depend upon his complexes, and that these complexes are psychical lesions dating back in many cases to earliest infancy and often due to causes from which no individual can be exempt. Every man who has had a father probably has something of an Œdipus complex; and if he hasn't, he has something else just as bad. From causes like these arise an infinite number of fantasies, falling into more or less recognizable groups and capable of more or less scientific classification and explanation. It is easy to classify the various forms of art and religion under the headings so provided, and to show that these forms of thought are nothing but the morbid outcome of mental disease. The demonstration has been carried out so often now that it has become a commonplace; and it has been applied with success to philosophy as well. Indeed, there is no reason

<sup>1</sup> I refer to Taine's doctrine of *hallucination vraie*.

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why it should not be applied to science itself; and analytic psychology would thus find itself tarred with its own brush and proved no less illusory, no less morbid, than art and religion and philosophy. But it seems to me that the most striking use of psycho-analytic methods would be their application to common everyday perception. By this application it could be shown that things which we all believe to be facts are the product of a diseased fancy. If hell, as I have seen it proved, is a sexual fantasy, then war, which General Sherman justly described as hell, is evidently another sexual fantasy of the same kind. I will not offend your ears by insisting upon the obviously symbolic character of policemen, lamp-posts, motor 'buses, and all the other familiar objects of that fantastic world which we call a London street, or labour the point that the embarrassment which I feel in addressing you is proof enough that I am, at the moment, the victim of a nudity dream, one common feature of which, as Freud himself has pointed out, is that our embarrassment is often far greater than is warranted by any deficiency in our clothing.

I hope it will not be thought that I am laughing at, or in any way disparaging, the immensely important fruits of psychological inquiry in the last two generations. On the contrary, I take these results very seriously indeed, and believe that they constitute an infinitely more important series of discoveries than wireless telegraphy, the aeroplane and the internal combustion engine. I hold no brief for any particular psychological school; but, frankly, I regard Freud as one of the greatest men of our age,

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and his works as almost perfect examples of scientific method and dispassionate analysis. But I wish to emphasize this: that psychologists have been for some time now studying with increasing success the pathology of the imagination, and visibly tending more and more to regard every exercise of the imagination as a pathological phenomenon. There is a reason for this tendency. If it is true that the mind finds itself placed in a world of alien objects to be apprehended by perception—and that, as I have explained, is our ordinary modern view of the matter—then imagination certainly is the villain of the piece, and any theory of imagination must necessarily take the form of a pathology. And this is precisely the form which the theory of imagination has generally taken in the main stream of European thought since Descartes. But, as I have already explained, whereas Descartes and his successors thought of imagination as a comparatively feeble villain, easily routed by anyone really bent on making his ideas clear and distinct, modern psychology has dispelled this confidence, and has demonstrated that we are all at the mercy of our enemy. And so cogent and convincing is the psychoanalyst's case, that, as I have tried to point out, nothing except common-sense, or prejudice if you prefer to call it so, forbids the application of his analysis with devastating effect to just those beliefs which both he and ourselves most firmly hold. For him, the problem does not arise. He is first and foremost a medical practitioner, and only treats those cases in which common-sense, or prejudice, tells him that there is a disease of the mind; but for the

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pure theorist it does arise, and my contention is that it can only be solved by facing the fact, for fact it is, that psycho-analysis has in principle overthrown the whole modern theory of the mind as perceiving an external world, with imagination as the villain of the piece. Psycho-analysis has shown that if this is so, then imagination holds all the cards, and has the game in his own hands. If imagination as such is a morbid faculty, the whole intellectual activity of the modern world is faced with bankruptcy.

What light does æsthetic throw on this evidently serious situation? I think it clears up the very point at issue. If we approach the problem solely from the standpoint of perception, we must give it up as insoluble. But if we approach it from the standpoint of æsthetic, we shall arrive at a very different result.

From this point of view we shall recognize in imagination not a morbid but a perfectly normal activity; an activity which instead of impeding the formation of knowledge actually advances it and, in fact, constitutes its initial stage. When we find this faculty operating, we shall not instantly despair of sanity; on the contrary, we should despair of sanity, if for a moment it ceased operating. We shall not assume, whatever it does, that it is misbehaving itself; we shall try to discriminate between its right and wrong activity. Now psycho-analysis possesses no criterion for distinguishing the healthy from the unhealthy imagination; it has only a pathology of the imagination, and does not recognize that there is such a thing as the healthy imagination. What

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we want is a physiology of the imagination,<sup>1</sup> a theory of the healthy imagination, to stand side by side with the psycho-pathology of the analysts and share with it the work of studying the imaginative activity of the mind. But this missing science, the physiology of the imagination, exists; it is called æsthetic.

When I speak of these sciences as sharing between them the study of the imagination, I mean this. A fantasy may be either healthy or morbid. If it is healthy, it is a work of art. If it is morbid, it is a nightmare, if you will allow me to use that word comprehensively for things that ought to be works of art and are not. It is for æsthetic, in its applied form as art-criticism, to say which it is. If it is a work of art, psychology need say no more: science has no cause for interference with a perfectly healthy organism. If it is a nightmare, æsthetic must hand it over to psycho-analysis to discover the nature,

<sup>1</sup> The reader will observe that I do not accuse the psychoanalysts of having *no* normal psychology; they have a normal psychology, but no normal psychology *of the imagination*. This defect they share with most modern schools of psychology; in a sense, with all. To take a typical instance, McDougall's *Outline of Psychology* nowhere even mentions imagination in the proper sense of the word. The very few paragraphs which deal with "imagining" define it as "thinking of remote objects," *i.e.* objects "not affecting the senses at the moment of thinking of" them (p. 284). To call the meeting of Bacchus and Ariadne an "object not affecting our senses at the moment of thinking of it," apart from the misuse of the word *thinking*, would be a *suppressio veri*; to call it a "remote object" would be a *suggestio falsi*, as encouraging a confusion between existing somewhere else and existing nowhere at all. The object of imagination in the proper sense of the word is not remote; it is non-existent. Until that fact is faced, not a single step has been taken towards a theory of imagination.



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cause and remedy of the disease that is afflicting the imagination. It will, I hope, be clear that I am not offering psycho-analysts the assistance of æsthetic. In their proper work, namely, the study of the diseased imagination, æsthetic can be of no use to them. I am only pointing out, first, that æsthetic is able to inform psycho-analysts that some imaginations are not diseased—a fact which unofficially, as men, they know well enough, but of which officially, *qua* psycho-analysts, they have no cognizance—and, secondly, that psycho-analysis can do infinite service to art-criticism by taking cases of bad art and showing why each is bad.<sup>1</sup> But until some such union of forces can take place, the psycho-analyst is labouring under the same kind of disadvantages which would affect a morbid anatomist whose knowledge of normal anatomy was deficient.

Let me take one more practical application of the view I am putting forward. If imagination is really the first step in the growth of knowledge, it follows that the fine arts have an exceedingly important place in education. It follows that small children ought to be more proficient in imagination than in anything else, and that this proficiency ought to be neither discouraged nor allowed to run riot, but encouraged under wise guidance in the light of a sound knowledge of its true character. It follows that children ought to be judiciously fed on poetry and other imaginative literature, on songs and music, on dancing, and on drawing and modelling. Now, in point of fact, this is very much the diet which all young children demand, and if their demands are

<sup>1</sup> Not *how* it is bad ; that is the art-critic's business.

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not catered for, they set about providing for themselves. So far, this confirms my theory. But if my theory is right, they ought not to be left to themselves in this matter. They ought to undergo a carefully planned education of the æsthetic faculty, and this ought to occupy the first place in the elementary school. I do not mean that they ought to be fed on classical music and Italian primitive paintings. I mean that they ought to draw and sing things suitable to their age and powers, and encouraged to draw and sing in a truly æsthetic frame of mind—not, that is, paying any attention to their emotions or to idiotic questions like “What does this tune remind you of?” but learning to appreciate plastic or musical form, to feel for the rhythmical structure of the work, and to hate everything sentimental and formless as schoolboys in my time were taught to hate a false quantity. It would not be difficult to do this, if once we could assure ourselves that it was worth doing.<sup>1</sup>

And lastly, I must not wholly omit the wider implications of æsthetic theory. I have said that the ordinary modern view of the mind represents it as situated in an alien world which, for its own welfare, it must come to know and find out how to manipulate. But that view leaves imagination out of account, or rather reduces it to the position of an impediment and an enemy. From that point of view art, as Lord

<sup>1</sup> It is being done as regards drawing, and excellently done, by Professor G. Lombardo-Radice and others in Italy: cf. his valuable books *Athena Fanciulla* (Bemporad, Florence, 1925), and *La Buona Messe* (Ascoc. Naz. per gli Interessi del Mezzogiorno, Rome, 1926).

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Balfour<sup>1</sup> has well argued, has no survival value; indeed, it has the opposite. I do not intend to draw Lord Balfour's conclusion that the idea of survival value is false. I would rather take the alternative course of arguing that the original point of view is fallacious.

If imagination is really a normal and healthy part of the mind's activity, only one conclusion, I think, is admissible: namely, that the work of mind is not merely cognitive and manipulative, but in the strictest sense of the word creative. It is the business of mind, not merely to discover a *modus vivendi* in an alien world, but quite literally to create a world of its own in which to live. This world must begin by being an imaginary world, and must go on by being actualized, made into a real world, simply by the mind's own creative energy. I do not think that this idea will seem paradoxical to any one who reflects that we possess obvious instances of this process in things like political and social systems, laws, institutions, customs and so forth. These are things that mind has made; they are not imaginary, they are as real as anything can be, but they owe their reality altogether to the work of the human mind. Yet, to the human mind, they now appear as an environment, a world of objective realities which condition its activity no less truly, and far more intimately, than geography and climate. And obviously they all began by being pure imaginations. Suppose, for instance, that I wish to have a week-end cottage in the country. I begin by imagining it, and I think out, or strictly speaking imagine out,

<sup>1</sup> *Theism and Humanism*, pp. 60-63.

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a number of alternative schemes in detail. I reject the schemes that can't be coherently imagined out; and when I have satisfied myself that one scheme is coherent, that it forms a self-contained imaginary whole, which means a pure work of art, I set to work to realize it. In doing so, I create for myself a number of habits, of obligations, of freedoms, which previously had existed only in imagination. I am creating a world of my own in which to live.

I do not propose at this point to raise the question whether this creative activity is the only function of the mind, or whether it also has to know and manipulate a world wholly alien to itself. In order to settle that question I should have to go deeper than for my present purpose I have gone into the general theory of the mind and of knowledge. My present purpose is to show what light is thrown by æsthetic upon the nature of mind and its place in the world. And my conclusion is that the science of æsthetic demonstrates the existence of an activity called imagination, an activity which, being indifferent to the reality or unreality of its own objects, could be nothing but a morbid or pathological factor in the life of a mind whose sole business was to cognize and manipulate external things. Æsthetic demonstrates that this imaginative activity is in point of fact capable of perfectly healthy and normal functioning, and, as so acting, gives their special character to all those highly various functions which we call arts; and that it operates in a pure form in what we call the fine arts. I have pointed out that it has a pathological as well as a healthy activity, and that we are indebted to modern psychology for a vast

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store of information concerning this side of its operations; but that since this psychology has inherited a view of mind which implies that all imagination is a morbid thing, it is unable to distinguish between a healthy and a diseased imagination. And finally, I have argued that the existence of this faculty gives a clue to a modification, to say no more, in our current view of the mind; proving as it does that part at least of the mind's work, that work on whose success the survival and sanity of the mind depend, is the creation, not merely the construction but the creation out of nothing, of an environment or world of external realities, whose existence depends wholly on the creative mind, and whose character expresses in its every detail the character of the mind that made it.

# ANTHROPOLOGY

By Professor C. G. SELIGMAN, M.D., F.R.S.,  
Professor of Ethnology, University of London.

· WITH a heading so vast, my lecture, if it is to be more than a mere tissue of conjecture and assertion, must necessarily confine itself to the examination of one or more subjects of special interest to anthropology at the present time. Of such debatable subjects none perhaps are of more immediate importance than (i) the distinguishing mental traits of the European races, (ii) the mode or modes of thought of the non-European races, and (iii) the relationship that such modes of thought bear to our own. I use the term non-European advisedly, since I shall deal not only with so-called primitive peoples but with the higher races of the Far East, who, though they differ from ourselves, cannot be regarded as inferior.<sup>1</sup>

It will save time and perhaps help my audience if I immediately point out that I cannot accept Levy Bruhl's thesis that the more primitive races think in a manner different from ourselves, that their thought processes are "mystical" and "prelogical" to such an extent that a new and special terminology is

<sup>1</sup> This contribution is to be regarded as largely a restatement and development of the views I put forward in my Presidential Address (1924) to the Royal Anthropological Institute.

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required to discuss them.<sup>1</sup> And lest those of you who are not anthropologists should think me careless or presumptuous—for the continued translation of M. Bruhl's books<sup>2</sup> shows at least that he has a considerable public—I would say that so far as I am aware this idea has not been accepted by any anthropologist in this country (including a not inconsiderable number of field workers), who should be the best qualified to judge. Moreover, I would add that in a large number of instances alleged "prelogical" and "mystical," thought can be paralleled or even be shown to occur among our peasantry and little educated classes at the present day, while three hundred years ago there were few educated Europeans who thought of disputing them. I am convinced that apparent differences in this field between the more primitive peoples and ourselves do not need to be explained by a different mode of thought, but are covered by the categories—often entirely alien to our own—into which savages, equally with civilized non-European races, divide their experiences. I propose to support this statement by quoting examples of savage categories in which states, or groups of animals and objects, to the present-day European utterly foreign to each other, are linked together, to follow this by examples of like conditions from China and then from Europe, both of the Mediæval and Renaissance periods and of the present day.

<sup>1</sup> *Les Fonctions Mentales dans les Sociétés Inférieures* (Paris, 1910). Cf. chapters i. and ii., especially pp. 30 and 79.

<sup>2</sup> *Primitive Mentality* (1923), the translation of *La Mentalité Primitive*, and *How Natives Think* (1926), the translation of *Les Fonctions*, etc.

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My first example will be from Australia, where Mrs Langloh Parker, writing of the Euahlayi tribe of north-western New South Wales, gives lists of what she terms "multiplex totems," belonging to the different (totemic) clans of the tribe. These are obviously not totems in the ordinary sense, the number and variety of objects included is too great; rather must we see in these groups (which Mrs Parker indicates are not complete) an example of how the universe, or rather its contents, is parcelled out among the clans, each group with the (true) totem of the clan constituting one particular category. Thus the clan with the emu as totem has associated with it fish (3), crustacea (2), birds (6), flies, plants (10), a particular spirit, and the north-east wind; the clan with the iguana as totem has the catfish, birds (9), a lizard, plants (7), stars and winds (2), and so on.<sup>1</sup>

No better examples of categories indicating a *Weltanschauung* unlike our own can be found than the noun-classes of the Bantu languages and the probably morphologically older Fulani, but, as their significance from the psychological standpoint is as yet almost unknown, as an African example I shall quote a list of ideas and objects into which, according to the late R. E. Dennett, the Bavili (a Bantu-speaking tribe of the Congo) divide their world. The first object of the three succeeding paragraphs

<sup>1</sup> For the lists from which these summaries are taken, and those of other clans, see K. Langloh Parker, *The Euahlayi Tribe* (1905), pp. 15-17; the numbers in parentheses indicate the number of species. Nor is such a partitioning of the universe peculiar to this tribe, as the works of Curr and of Fison clearly show.



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is to be considered as a main heading under which those following are subsumed<sup>1</sup>:—

Water—Morality, wisdom (as opposed to reason), virtue, breath, speech, inspiration, hearing, mouth, fatherhood.

Earth—Solids, justice, reason, intelligence, essence, seed, herbs and grass, hands, stomach, heart, motherhood.

Fire—Love, desire, marriage, union, spirit, light, kernel, tying-up, heat and cold, the womb, smell.

It seems, though perhaps this is less certain, that a season should be associated with each category.<sup>2</sup>

My last example is from America, and in this instance space permits me to do little more than refer to the categories of the Zuni, which have been so well summarized by MM. Durkheim and Mauss. These authors show that each direction of space has associated with it a colour, a season, wind or winds, and other natural processes; such states as war or peace; and certain animals, many being totem animals, so that the clans of mankind fit naturally into the system.<sup>3</sup>

Passing to the civilized peoples of the Far East, we find among the Chinese a well developed system

<sup>1</sup> R. E. Dennett, *At the Back of the Black Man's Mind* (London, 1906), p. 108.

<sup>2</sup> *Op. cit.*, p. 109.

<sup>3</sup> Durkheim & Mauss, "Classifications Primitives," *L'Année Sociologique*, vol. vi. (Paris, 1903), pp. 34-44.

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of ideas, constituting the basis of that type of cult and philosophy which is commonly known as Taoism. One of its most essential ideas depends on the division of space into four cardinal directions. An animal presides over and gives its name to each of these regions (it might almost be said that each animal is its own region), the blue dragon of the east, the red bird of the south, the white tiger of the west, and the black tortoise of the north, and to each region is assigned the colour of its animal. The latter governs both the earth and the sky; thus a hill or any land form that seems to resemble a tiger is the tiger of the west; if a dragon be suggested, it is the dragon of the east. It follows that any locality will be considered favourable if the objects surrounding it are appropriate to their position; for instance, if those to the west are of the tiger and those to the east are of the dragon. In each of the four regions there are distributed seven constellations, and these give rise to twenty-eight conjunctions, but these I shall leave aside. Further, each cardinal direction is divided into two parts, from each of which comes one of the eight winds, which, in turn, are associated with eight powers, represented by the eight trigrams which occupy the centre of the magic board. These eight powers are, in the first place, farthest removed from each other, Heaven (Khien) and Earth (Khwun); between them are situated six other powers<sup>1</sup>:—

Tui: watery exhalation, vapours, clouds, etc.

Li: fire, heat, the sun, light, lightning.

<sup>1</sup> J. J. M. de Groot, *The Religious System of China* (Leyden, 1897), Book I., part 3, p. 960.

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Chen: thunder.

Sun: wind, and wood.

Khan: water, rivers, lakes, seas, etc.

Ken: mountains.

With each of these eight categories there are associated numerous qualities and objects, thus:—

Heaven (Khien) corresponds to immobility and strength; it represents a horse, the head, the heavenly sphere, a father, a prince, roundness, jade, metal, cold, ice, red colours, certain kinds of horse, fruit of trees, etc.

Earth (Khwun) represents docility and, consequently, bovine cattle; further, the belly, Mother Earth, cloth, cauldrons, parsimony, a heifer, large carts, figures, a multitude, a handle, black colours, etc.<sup>1</sup>

It should be added that Khien is associated with the South and Khwun with the North, summer appertaining to the first and winter to the latter.

Now just such ideas as the above were in vogue in Europe so long as science was, in the main, represented by alchemy and astrology, *i.e.* for a period of, I suppose, at least fifteen hundred years, and in this country coming down to the eighteenth century.

The following account is taken from the article "Astrology," by Professor Jastrow, in the eleventh edition of the *Encyclopædia Britannica*:—

"Colours, metals, stones, plants, drugs and animal life of all kinds were associated with the planets and placed under their tutelage. In the system that passes under the name of

<sup>1</sup> de Groot, *op. cit.*, p. 964.

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Ptolemy, Saturn is associated with grey, Jupiter with white, Mars with red, Venus with yellow. . . . The sun was associated with gold, the moon with silver, Jupiter with electrum . . . and so on. . . . In the same way stones were connected with both the planets and the months; plants . . . . were connected with the planets, and animals likewise were placed under the guidance and protection of one or other of the heavenly bodies. . . . The fate of the individual, as that feature of the future which had a supreme interest, led to the association of the planets with parts of the body. . . . Venus, as the planet of the passion of love, was supposed to reign supreme over the genital organs, the belly and the lower limbs; Mars, as the violent planet, is associated with the bile, as well as with the blood and kidneys. Again, the right ear is associated with Saturn, the left ear with Mars, the right eye . . . with the sun and the left eye with the moon, while in the case of the female it was just the reverse."

Moreover, the same association of ideas was applied to the constellations of the zodiac:—

"The head was placed in the first sign of the zodiac—the ram; and the feet in the last sign—the fishes. Between these two extremes the other parts and organs of the body were distributed . . . the shoulders and arms to the Gemini, the breast to Cancer, the flanks to Leo, the bladder to Virgo."

With anatomy thus connected with the planets and constellations, particular diseases came to be attributed to the influence of the planets, or the position of a star, presumably in much the same way as the days of the week were associated with the planets.

In point of fact beliefs of this sort in no way ceased, even among the educated, with the full

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development of the Renaissance or even with the coming of the Victorian Age; space does not allow of quotations or references, but those who have the leisure may follow them in the writings of astrologists and theosophists of the present day.

Returning now to Levy Bruhl's "mystic participation," so far is this from being peculiar to the savage or primitive, that all over Europe, including our own islands, we find just such beliefs as M. Bruhl considers typical of the prelogical thought of savages.

Could there be any better example than the sympathetic powder or salve of Sir Kenelm Digby (1603-1665)?—

"Mr. Howell, secretary to the Duke of Buckingham, was wounded seriously in a duel. . . . Four or five days after . . . when . . . the patient was in the lowest depth of misery . . . Sir Kenelm's advice was sought. He said he was willing to do his best, but he was, not unnaturally, afraid of being charged with witchcraft or incapacity. He was assured that the fame of his previous cures was so great that he need be under no apprehension. He then asked for a piece of cloth on which was some of the patient's blood, and he was handed part of the first bandage that had been applied. Sir Kenelm asked next for a basin of water . . . and into this he put a handful of the powder he kept in the cabinet on his table, and when it was dissolved he added the piece of blood-stained cloth. After waiting anxiously for an hour he asked the patient how he felt. The reply was gratifying; he felt an agreeable coolness, he said, as if a napkin cold and wet had been laid upon his arm. Sir Kenelm assured Howell it was the good effect of his medicine, and that if moderate heat and cold were attended to he would soon be well. The result justified his assertion. This cure was attested by the Duke of Buckingham, and James himself

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inquired as to the cure very narrowly, at the same time joking Digby . . . on being a magician and a sorcerer."

The sympathetic treatment of a wound by anointing the weapon that caused it is twice referred to by Dryden in his *Tempest* (Act V, scenes 1 and 2), and coming to the nineteenth century there are instances of a swordstick and a knife being treated in order that the wounds inflicted through them might heal.<sup>1</sup>

Since writing the above I have found a criticism of M. Bruhl's theories by one having first-hand knowledge of the South African negro, which is so much to the point that I cannot forbear quoting. Professor R. F. A. Hoernle writes:—

"[M. Bruhl], it will be remembered, describes primitive mentality as *prelogical*, and formulates for it a law of thought, the 'law of participation,' in accordance with which primitive thought identifies things which to us seem mutually exclusive, and asserts essential connections between things which, to us, have nothing to do with each other. Well, what Professor Levy Bruhl calls 'pre-logical' I would rather call 'pre-scientific.' A native will argue as 'logically' from his premises as we do from ours, and if, as often happens, we cannot follow the 'working' of his mind, nor he the way our minds work, is it not because both he and we reason from different sets of premises. . . .' (Prolegomena to the Study of the Black Man's Mind, *Journal of Philosophical Studies*, Jan. 1927.)

<sup>1</sup> These examples are taken from the Folk-Lore Society publication entitled *Folk-Medicine*, by W. G. Black (1883), where further details will be found. Cf. pp. 53-55.

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Having defined my position, but before considering the more or less distinctive mental traits of the three European races—for I hope to convince you that such exist—it will be convenient to consider how far among Europeans generally particular types of mental disposition can be distinguished. It is the great merit of Jung that he has clearly extended to the normal population the division into two great "dispositions" or "reaction types," the Extravert and the Introvert, first worked out on pathological material. Jung's statement on this matter is so clear and so much to the point that I make no apology for quoting in full his most relevant passage:—

"The existence of two mental affections so opposite in character as *hysteria* and *dementia præcox*, in which the contrast rests on the almost exclusive supremacy of extraversion or introversion, suggests that these two psychological types may exist equally well in normal persons, who may be characterized by the relative predominance of one or other of the two mechanisms. Psychiatrists know very well that before either illness is fully declared, patients already present the characteristic type, traces of which are to be found from the earliest years of life . . . the neurotic only accentuates and shows in relief the characteristic traits of his personality . . . the hysterical character is not simply the product of the illness, but pre-existed it in a measure. And [it has been shown for] *dementia præcox* patients that this is also the case . . . dissociations or eccentricities were present before the onset of the illness. If this is so, one may certainly expect to meet the same contrast between psychological temperaments outside the sphere of pathology. It is, moreover, easy to cull from literature numerous examples which bear witness

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to the actual existence of these two opposite types of mentality." <sup>1</sup>

Once the idea of the two dispositions is grasped, no one should have much difficulty in discovering and identifying extreme and typical instances, but since the make-up of most of us is mixed, there is frequently room for discussion in particular instances. In spite of this it seems that the members of large racial groups do in the main exhibit one or other disposition in numbers sufficiently preponderant to enable such groups to be broadly, but in the main correctly, classified under one or the other heading. Leaving this aspect for the moment, it will be convenient to make use of the artistic products of the two dispositions to define further their more obvious mental traits, and to show how these inform their technical activities.

In painting, the credit of discovery, as far as I am aware, belongs to Mr. Alfred Thornton, who, with Dr. Gordon, first pointed out, as far as Europe is concerned, that the works of famous painters fall into two classes distinguishable at sight in the more

<sup>1</sup> Jung, C. G., *Analytical Psychology* (1917), pp. 289, 290. I have spoken of Jung as the discoverer of the two types, since he was the first to systematize their differences, to show their significance in pathology, and to indicate the part they play in normal life. But years before this sound observations upon the two types had been made by William James, who divided philosophers into two classes—the "tender-minded" [introvert], who are only interested in the inner life and spiritual things, and the "tough-minded" [extravert], who lay most stress on material things and objective reality. More recently Dr Ronald Gordon has given a good description of extravert and introvert behaviour within the limits of the normal in his book *Personality* (1926). Cf. especially chapter x.



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pronounced instances, and that these classes each exhibit a characteristic *facies* corresponding to one of the two dispositions. It will perhaps simplify what follows to point out that, broadly speaking, that form of painting usually termed "Classical" is characteristic of introversion, while "Romantic" painting is of the extravert disposition.

The ideas of Thornton and Gordon, with much of the evidence upon which their conclusions are based, are set forth in a number of articles in *The Burlington Magazine*.<sup>1</sup> I am indebted to Mr. Thornton for the following summary:—

"The introvert painter emphasizes severity of form, and his painting is characterized by deliberate thinking, with suppression of the more emotional types of symbolism. His work is therefore carefully drawn, somewhat hard, severe in outline and inclined to be arid in colour; at best the colour schemes are restrained and relate very exactly to the design of the picture, but with little verve.

"On the other hand, when a painter is of the extravert type his colour is full and rich, often luscious, the form is not exact; but the lines are free and flowing and tend to exaggeration of movement, their dynamic quality being in strong contrast with the static tendency exhibited by the introvert's careful compositions. Extravert work, even if slowly produced, still gives the impression, in many cases, of having been executed in a white heat of passion, and the brushwork is vigorous, at times to the verge of brutality, differing vastly from the thin dry technique of much introvert painting. So it may be said that the general character of the type of work produced by the extravert betokens

<sup>1</sup> Thornton and Gordon, "The Influence of certain Psychological Reactions in Painting," *Burlington Magazine*, May 1920; and "Art in Relation to Life," *op. cit.*, July and August, 1921.

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emotional emphasis, and is accompanied by apparent carelessness as to detail and absence of severity in form. Yet the great men of both types, being in a measure able to adapt, attain a relatively high standard even when their temperaments are not naturally suited to the selected subject."

To illustrate these points I cannot do better than to ask you to compare the treatment of the same subject by two great painters of the sixteenth-seventeenth centuries: Rubens (extravert), and Poussin (introvert), and to follow this by examining two paintings and then self-portraits of the first half of the nineteenth century, viz. Delacroix (extravert) and Ingres (introvert), concluding perhaps with the works of Segonzac, a typical extravert artist of the younger generation who has recently exhibited much in this country.

At this stage it is scarcely possible to avoid thinking of two types of poetry which we have in our language, and it is immediately evident that here, too, the two temperaments stand apart from each other. On the one side Kipling, Swinburne, Whitman, Blake represent the extravert disposition in various degrees, on the other Tennyson, Bridges, Dowson the introvert. Lest it be thought that this is but an individual view I may refer to a recent article by an anonymous writer, who without any reference to extraversion and introversion has accurately hit off the dominant traits of the two dispositions:—

"Poets and poetry are, and always have been, of two kinds. You may make the division on many lines, but the

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results will not be very different. On the one side there is revolution, on the other acceptance; on the one freedom and wilfulness, on the other art and labour and learning; on the one conservatism, tradition, sobriety, the quietness and confidence of ancient ways in thought and form and language, on the other the pleasures and dangers of originality and novelty, the confidence of youth, impatient at the lethargy of custom, eager to make all things new, and sure that making them new is the same thing as making them better. . . . Anyhow, there the division lies—one sort on one side, and one on the other; each, perhaps, partaking a little of the qualities of its opposite, but still being itself and not its opposite; letting the balance lean decidedly on the side of form and craftsmanship and tradition . . . or, again, on the other side, the side of defiance and experiment, originality and rebellion. There they confront each other down the centuries. . . . Of course, the craftsmen have much more than craftsmanship, and the iconoclasts are not without form, or they would not be remembered at all. But there is a wall, however thin, between them, and neither the greatest nor the most cherished and read are all on one side of it.”<sup>1</sup>

Summing up at this stage, we may say that we have two main dispositions or reaction types; on the one hand the “going forth” type, characterized by a healthy or even exaggerated interest in people, with a fairly typical form of verse, a vivid palette, a summary and emotional line, the other type represented by the man of (philosophical) systems, restrained in manner and generally with less diffuse interests. Within the arts he holds a duller palette and a more sober pencil, capable in poetry of produc-

<sup>1</sup> Acceptance and Adventure, *Times Literary Supplement*, vol. xxii. (1923), pp. 757, 758.

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ing lines of intense beauty because of the care, time, and polish he is willing to bestow on his imagery. The introvert is characteristically the man who works over his material time and time again, and, *e.g.*, has the greatest difficulty in finishing a painting or in making up his mind to send his MS. to his publisher.

Having then demonstrated these dispositions or reaction types in Europeans, we may essay the examination of the three great European races from our special standpoint, and then pass on to consider a number of non-European peoples of varying race and culture.

Dealing first with the races of Europe,<sup>1</sup> while facts are difficult, certain data few, and conclusions in many respects tentative, we can hardly go wrong if we regard the Mediterranean race as predominantly extravert. Of this race MacDougall writes: "The Mediterranean peoples are vivacious, quick, impetuous, impulsive; their emotions blaze out vividly and instantaneously into violent expression and violent action."<sup>2</sup> The Mediterraneans show an intense

<sup>1</sup> These are the Nordic, the Alpine, and the Mediterranean, each occupying predominantly the area associated geographically with these names. The most striking characteristics of each may be summed up as follows:—

Nordic : tall, long-headed, fair-skinned, eyes blue or grey, with blond hair; in crosses often brown haired and light eyed.

Alpine : of medium stature, round-headed, and often broad faced, skin often sallow, eyes and hair medium or dark.

Mediterranean : short, long-headed, often with relatively dark skin, dark eyes and hair, the latter often wavy or curly.

I purposely omit the so-called Dinaric and East Baltic races, which may be hybrid.

<sup>2</sup> Quoted by B. S. Bramwell in *The Eugenics Review*, vol. xvi., October 1923.

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appreciation of colour, glitter, and movement, and a German author has drawn attention to the important part played by illustrations in their papers. The great Italian schools of painting were all North Italian;<sup>1</sup> it may be assumed the painters were so, too, *i.e.* presumably not pure Mediterraneans; on the other hand Spain, presenting less variation in physical type than any other equal area in Europe,<sup>2</sup> has also produced a series of great painters, predominantly extravert. I have the impression that the Mediterraneans are essentially "sympathetic" in the etymological sense of the word, that they are relatively easily swayed by rhetoric and the written word; perhaps even a comparatively small gathering may exhibit a crowd psychology. To put it broadly, they are more suggestible than other European races.

The Nordic seems almost as remote from the Mediterranean in temperament as he is in physique. Essentially an individualist, he shows a definite incapacity to understand and sympathize with views not his own. However, his natural reserve generally prevents his thrusting his views on others, *i.e.* his general attitude is introvert. His "herd" tends to be small, and it is this individualism with, perhaps, a certain capacity for mysticism, which in the religious sphere has led to that Protestantism of many sects which contrasts so sharply with the

<sup>1</sup> Mr Thornton regards the Florentine School as introvert, the Venetian as extravert.

<sup>2</sup> Ripley, *The Races of Europe*, pp. 273, 274, *i.e.* apart from a considerable increase of brachycephaly in the highlands of the North-West.

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dominant Catholicism not only of Mediterranean but of Alpine lands. Lenz regards the Nordic as essentially mystic and religio-philosophical: "The tendency to take careful thought of the future leads the Nordic to examine the whence and whither of the World and of Mankind. He is distinctly religious and philosophical, but his yearnings, not being easily satisfied, tend to drive him beyond the actual and into mere metaphysic."<sup>1</sup>

Seen from another angle his individualism explains the Nordic love of the country as opposed to the town, capacity for colonization, and perhaps love of the sea, characteristics which, combined with physical strength and fighting vigour, have produced an aristocratic habit permitting a relatively small number of northerners to impose their leadership on much larger groups upon whom they have thrust themselves.

The fighting temper of the Nordic—and how reckless this temper can be is obvious in the sagas—is just one of those features which would be accentuated by selection so long as the race kept reasonably pure; there is, indeed, a curious similarity, amounting almost to a parallelism, between the character and actions of the fighters of the Njal Saga and some of the more reckless of the cowboys and desperadoes of the cattle war in New Mexico. A good description of the latter has recently been published in the form of the biography of one "Billy the Kid," described as having light brown hair, grey eyes, and a long and colourless face, *i.e.* he was of predominantly

<sup>1</sup> Lenz, in Bauer, Fisher & Lenz, *Menschliche Erblchkeitslehre*, (Munich 1923), p. 422.

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Nordic type. Billy seems to have killed about a score of men before being himself shot at the age of twenty-one. After a lengthy and interesting analysis of character, in which Billy is stated to have had a bright and alert mind, to have been of quick sympathy, loyal in his friendships, and of the coldest, most imperturbable courage, but to have placed no value on human life (whether his own or that of another), the author goes on to remark that:—

“Like all the noted killers of the West, Billy the Kid was of the blond type.

“Wild Bill Hickok, Ben Thompson . . . the list of others is long—were all blond. There was not a pair of brown eyes among them. It was the grey and blue eye that flashed death in the days when the six-shooter ruled the frontier. This blondness of desperadoes is a curious fact, contrary to popular imagination and the traditions of art and the stage. . . . It may be remarked further . . . that the West's bad men were never heavy, stolid, lowering brutes. Most of them were good-looking, some remarkably so. Wild Bill Hickok, beau-ideal of desperadoes, was considered the handsomest man of his day on the frontier, and with his blue eyes and yellow hair falling on his shoulders, he moved through his life of tragedies with something of the beauty of a Greek god. . . . Cold deadliness in Western history seems to have run to frosty colouring in eyes, hair, and complexion.”<sup>1</sup>

I would, however, tentatively advance that in one respect these Nordics of the New World differ from their ancestors; they do not seem to have shown

<sup>1</sup> Walter Noble Burns, *Billy the Kid* (London, n.d.), pp. 51-55.

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the acquisitiveness of the heroes of the sagas, and of their immediate descendants, the mediæval Normans. I would suggest that a difference in environment is here involved; acquisitiveness, often accompanied by that particular form of chiefly generosity so characteristic of what Professor Chadwick has called the Heroic Age, may well be the concomitant of a poor country and a raiding life, whether in Europe or, as I have seen it, in the poor steppe or desert country of the Arabs.

Some interesting questions arise concerning the type of fighting characteristic of the Nordic, which should equally be more or less characteristic of the introvert disposition. I propose to approach this difficult matter by a roundabout route. Any one who knows the Malay even slightly, will not doubt that he is predominantly introvert; yet in the affection known as *latah* the Malay presents the classical picture of a typical hysterical dissociation, comparable with or actually presenting an extreme example of "mirror movement," also regarded as an hysterical symptom. Yet this same Malay, after brooding over real or imagined grievances, may take his *kris*, and, stabbing right and left, rush forth, regardless alike of the ties of blood and of the injuries he may himself receive, to do as much damage as he may before he is himself overwhelmed. The difficulty is obvious, and to explain it by an over-compensation leading to an exaggeratedly extravert reaction, though theoretically possible, is perhaps too simple. Rather would I seek or at least consider an explanation somewhat on the following lines: Dr. R. D. Gillespie has suggested to me that the



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*amok-latah*<sup>1</sup> combination may be paralleled by paranoid attacks associated with violent homicidal attempts in schizophrenia (*dementia præcox*), a condition of extreme introversion, and he also points out that in the catatonic type of *dementia præcox* patients may exhibit advanced mirror movement. Returning to the Nordic, a curious unemotional coolness in fighting may be replaced by a condition of tempestuous excitement which reckes nothing of wounds or death so that the enemy be slain. As examples, reference may be made on the one hand to the death of Gunnaras recorded in the *Njal Saga*,<sup>2</sup> and, on the other, to the *berserk* condition of manic excitement to which no inconsiderable number of the warriors of the sagas were subject. Since time does not allow any discussion of the *berserker*, I give a number of references for which I am indebted to Miss Camilla Wedgwood.<sup>3</sup>

In art the Northerners seem to show particular love of detail and form rather than colour.<sup>4</sup> Contrast,

<sup>1</sup> For an account of *amok* see "The *Amok* of Dâto Kâya Biji Derja," by Sir Hugh Clifford, in the series of tales published (1897) under the title *In Court and Kampong*. *Latah* has been described by Sir Frank Swettenham in *Malay Sketches* (1900), which also contains a description of *amok*.

<sup>2</sup> See Sir George Dasent's translation, *The Story of Burnt Njal* (1900), pp. 136-38.

<sup>3</sup> *Ynglinga Saga*, cap. 6 (defines the condition); *Herwarar Saga*, cap. 3 (*berserker* may injure their own friends or goods), and other references in this saga, especially p. 103 and pp. 144-45 of N. Kershaw's translation in *Stories and Ballads of the Far Past* (Cambridge 1921); *Grettir Saga*, cap. 29.

<sup>4</sup> This seems to be supported by Mr Thornton, who tells me that in much German art the emphasis is rather on form than colour, *i.e.* in comparison with modern British and French schools. Some Nordic predominance may be assumed for Germany.

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for instance, the weak or conventional landscape of much southern painting with the more naturalistic and vigorous representation in paintings of the northern school.<sup>1</sup>

It is difficult for one who has not lived in Central Europe to form an opinion concerning the temperament of the Alpine race, but Dr. Jung writes to me of the Swiss peasant as moderately introvert. Predominantly Catholic, at any rate in western and central Europe, the Alpines seem to lack the protestant individualism of the Nordics, while it is generally agreed that they are usually suited to village life and show little tendency to adventure and colonization. It is, indeed, alleged that their interest in money and what it can buy is unduly pronounced, and that with this there goes a relative absence of genius or outstanding ability. A number of writers have attributed to the Alpines a certain quality of moroseness; if this be so, another aspect

<sup>1</sup> This has been interestingly brought out by Mrs C. H. Peers in her book *The Early Northern Painters* (1923), where she also emphasizes the great love of the country in northern literature: ". . . the great love the Northern peoples have always shown for the beauties of Nature. Their want of selection and their lack of craving for ideal perfection, which is so noticeable in their representation of the human form, cease directly they paint anything in the nature of a landscape . . . and we find the same passionate love of the country, its sights and its sounds, in Northern literature. . . . The exact reverse is to be found in Italian art. They gave their love entirely to the human form and to animals, ceaselessly studying them pictorially and scientifically, but landscape interested them hardly at all. They had a perfectly charming formula composed of delicate trees, green hillocks and strange rocks, which they used as a setting for their figures. There is no evidence whatever before Titian of any careful landscape study. (pp. 80-81.)

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of this quality might be the steadfastness and capacity to bear punishment which the Swiss wars of independence showed them to possess.

Perhaps the above applies more nearly to the Swiss peasant than to the great mass of Slavic-speaking roundheads further east. On this point I may quote Miss Durham, who holds that "predominantly Catholic" is too sweeping; she points out that, starting from Samosata in Asia Minor, the home of the Manichæans, there is a line of heresies stretching to the Pyrenees: Paulicians, Bogomils, Kathars and Waldenses. From this aspect the splitting of the Byzantine Church from Rome in 1054 is of ethnic interest, for by that date the Byzantine Empire was heavily Slavized. But even then there was no cohesion; having accepted Byzantium, each section, Serb, Rouman, Russian, Bulgar, Greek, Montenegrin, split off and proceeded "to found an autocephalous church, consecrating its own saints and fighting the church next door. The so-called Patriarch of the Church at Constantinople makes the chrism. Otherwise he seems of little importance." Further, in Russia a mass of sects have arisen and refused adherence to the Church, even though this had torn clear from Rome: "The Holy Synod and the Tsar kept them down by extreme persecution, but nothing stopped them. In the direst circumstances they have struggled on, living, as I suppose, an introvert life."

It is obvious that Miss Durham's roundheaded heretics of Europe have their parallel in the roundheaded sectarians of the hills of Asia

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Minor and of Syria, the Tahtadji (Allewi) and Bektash of Lycia, the Kyzylbash, Druses, and Maronites.<sup>1</sup>

Miss Durham suggests that "It is this suppressed 'dissenter' mind that has burst out and made the Russian revolution, and which is clearly resolved to carry its beliefs to all parts of the world . . . [and that] the Bolshevist propaganda is another manifestation of this instinct for disintegration of the round-heads and their belief in a marvellous millenium ahead."

To sum up, the above attempts to outline the psychic qualities of the three great races of Europe, although necessarily tentative and incomplete in the extreme, and indeed likely to be erroneous in detail, are, I think, sufficiently true to warrant the conclusion (referred to on p. 254) that the different races of Europe do show different dispositions or "reaction types," and that one of these races, the Mediterranean, is definitely extravert, while another, the Nordic, is at least relatively introvert.

Leaving Europe and passing to the Far East, the anthropologist, even if he lacks first-hand knowledge of China and Japan, immediately becomes aware of a profound difference in the modes of thought of the two countries. Japan is almost typically extravert, while China, if far less easy to understand and therefore to place, is certainly relatively introvert.

<sup>1</sup> Concerning all these see F. von Luschan, "The Early Inhabitants of Western Asia," *Journ. Roy. Anthropol. Inst.*, vol. xli. 1911.

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A Chinese writer<sup>1</sup> has well described the different attitudes of the two nations towards outside influence, while, if it be suggested that a Chinese may be no fair critic of the Japanese, there remains the estimate of the Japanese character written by Mr. Y. Okakura, and published in this country under almost official patronage.<sup>2</sup>

Mr. Liang Ch'i-Ch'ao writes:—

“The reception of foreign learning by the Chinese people differs from its reception by the Japanese. Japan is a small country, and, moreover, possesses no learning which is really its own. Therefore, if such learning arrives from without, the Japanese rush to it as though on galloping horses, change as rapidly as echo follows sound, and in the twinkling of an eye the whole nation is transformed. However a careful estimate of their capacity shows that they are really nothing more than mere imitators; they are in no sense able to add anything of their own or anything they may have themselves initiated. Now China is not like that. China is a huge country with a learning of its own, which has been handed down for several thousand years, and which is so well fortified by defences that foreign ideas do not easily find their way in. Even if they do get in, for many—perhaps a hundred—years their influence will not succeed in rumpling the hair of one's head. . . .”

Of Japan Mr. Okakura writes:—

“The Japanese as a whole are not a people with much aptitude for deep metaphysical ways of thinking. . . .

<sup>1</sup> Liang Ch'i-Ch'ao, “The Civilization of Japan,” translated by Professor Giles, *Gems of Chinese Literature* (Shanghai), 1922, p. 271. The author, born 1872, is described as “one of the most brilliant of the band of reformers who succeeded in establishing the Republic.”

<sup>2</sup> *The Japanese Spirit* (1909).

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Warlike by nature more than anything else, they have been known from the very beginning to have had the soldier-like simplicity and the easy contentment of men of action—qualities which the practical nature of Confucian ethics had ample chance to develop. The abstruse conceptions of Chinese or Indian origin have been received into the Japanese mind just as they were preached, and usually we have not troubled ourselves to think them out again; but . . . have generalized them straight away and turned them immediately into so many working principles. There are any number of instances of slight hints given by some people on the continent and worked out to suit our own purposes into maxims of immediate and practical value. Ideals in their original home are ideals no longer in our island home. They are interpreted into so many realities with a direct bearing on our daily life. . . .

“This, as you will see, explains why we have failed to produce any original thinkers; this is why we have to recognize our indebtedness for almost all the important ideas which have brought about social innovation, either to China or to India, or else to the modern Western nations. . . . We are, I think, a people of the Present and the Tangible, of the broad Daylight and the plainly Visible. The undeniable proclivity of our mind in favour of determination and action, as contrasted with deliberation and calm. . . . Pure reasoning as such has had for us little value beyond the help it affords us in harbouring our drifting thought in some nearest port, where we can follow any peaceful occupation rather than be fighting what we should call a useless fight with troubled billows and unfathomable depths.”<sup>1</sup>

In the arts the difference between these two great nations is immediately obvious. In the earlier periods the greatest paintings of Japan if not the work

<sup>1</sup> Y. Okakura. *Op. cit.*, pp. 43-46.

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of Chinese artists were painted by their pupils, while it is but a truism to say that no Japanese metal work can compare for a moment with the supreme dignity and restrained grandeur attained (sometimes by means of but a single band of formal ornament) by Chinese bronzes of Chou and Han date. At a later date perhaps the most characteristic of Japanese arts, colour-printing by wood blocks, was learned from China, but while in the latter the art failed to obtain any vast popularity, and remained restrained in line, its efflorescence in Japan has given us whole series, perhaps schools, of colour printers, among them some great artists, whose work, dealing almost entirely with the affairs of every-day life, including the theatre, exhibits those bold sweeps and summary qualities of line which are so admired and are so characteristic of the Japanese colour print.<sup>1</sup>

Any account of the psychic qualities of the Japanese must necessarily take into account their Tea Ceremonies. The very formal ritual which I have briefly described in the address already referred to is evidently—it might even be said laboriously—introvert. What, then, is its history? In the first place it arose in China; its elaboration into a rigid formalism in Japan appears to have been largely in connection with the Zen philosophy; in the fourteenth century singing and dancing girls played a

<sup>1</sup> Cf. Brinkley in a passage much to the point in which he writes of "the impressionist proclivity of Japanese art, whether pictorial or poetical; its delight in expressing ideas by a few strong strokes of the brush or a few cleverly compacted ideographs." *China and Japan* (1903), vol. iii., p. 60.

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part in the ritual, while some two hundred years later the "art" had split into various schools. It was Sen-no-Rikyū, the head of one of these, who purified the ceremony, taking simplicity as an essential canon and instituting the elaborate etiquette still practised at the present day. It would seem, then, that the extreme formalism of the ceremony is to a large extent artificial, and may, perhaps, be regarded as exhibiting an intentional compensation, or over-compensation, while even in connection with the Ceremony the essentially extravert character of the Japanese comes out in the huge prices paid for tea jars at public sales in Tokyo.

At this stage we may well pause and examine the facts already presented. We have seen that among Europeans two main reaction types or dispositions exist, and that one of the same two types occurs among civilized peoples—whether West or East—in such preponderant numbers as to allow us broadly to characterize whole races or nations in no way closely related to each other as respectively extravert and introvert. I venture to think that this is a sufficiently striking result, for we can hardly regard these differences in disposition as other than qualitative variations in the Unconscious, which be it noted must have arisen independently in stocks as far apart as the White and Yellow races. With this curious parallelism to guide us the next step can hardly be other than to search for other common manifestations of psychic activity in races of diverse origin and civilization. And here it is necessary to point out that two different conditions present



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themselves for examination. Similar or identical results may be brought about (1) by conscious adaptation to similar needs in environment, or (2) may be found where there is no substantial resemblance in environment; indeed in certain instances they cannot on any reasonable supposition be due to other than deep-seated qualitative similarity in the Unconscious. It is important to emphasize the nature of both classes and to point out that in the present state of our knowledge it seems necessary to ignore all argument based on community of myth and legend, since, however unlikely in any given case, it can hardly be possible to exclude absolutely the factors we include under the terms migration and diffusion; in other words, it will only be in exceptional instances possible to make use of data depending entirely upon consciously directed thought. These reasons, and the considerable space necessary to examine the conditions acting in each instance, unfortunately negative any discussion of examples of the first class; the applicable tests of the similarities or differences in the thought processes of different races will be those directly associated with the Unconscious.

Let us begin our examination of examples of the second class by considering certain common forms of the action of the Unconscious in the white races, and see whether these also occur in the peoples of the Far East. For the present we will leave aside the rather special problem presented by the type-dream and will consider that form of symbolism in which either in dreams or during the progress of neuroses a fact or trend of emotional import (often a wish or fear) is represented in a disguised form (or sym-

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bolically), *i.e.* by some object or act other than that which directly and obviously connotes itself. Among ourselves there are plenty of examples of both forms in easily accessible literature; this is not so for the Far East, but Mr. Arthur Waley's scholarship has given us, in translation, an example of each. Under the title "The Pitcher" Mr. Waley has published a poem by Yuan Chen (A.D. 779-831),<sup>1</sup> the record of an anxiety dream with a rich symbolism, the latter part of the poem constituting a partial analysis during the waking state of its manifest content:—

"I dreamt I climbed to a high, high plain ;  
And on the plain I found a deep well.  
My throat was dry with climbing and I longed to drink,  
And my eyes were eager to look into the cool shaft.  
I walked round it ; I looked right down ;  
I saw my image mirrored on the face of the pool.  
An earthen pitcher was sinking into the black depths ;  
There was no rope to pull it to the well-head.  
I was strangely troubled lest the pitcher should be lost,  
And started wildly running to look for help.  
From village to village I scoured that high plain ;  
The men were gone ; the dogs leapt at my throat.  
I came back and walked weeping round the well ;  
Faster and faster the blinding tears flowed—  
Till my own sobbing suddenly woke me up ;

. . . . .

I sat up in bed and tried to arrange my thoughts ;  
The plain in my dream was the graveyard at Ch'ang-an,  
Those hundred acres of untilled land.

. . . . .

<sup>1</sup> Arthur Waley, *More Translations from the Chinese*, pp. 81-82.

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And to-night my love who died long ago  
Came into my dream as the pitcher sunk in the well.  
That was why the tears suddenly streamed from my eyes,  
Streamed from my eyes and fell on the collar of my dress."

The other example of a series of associations to which I shall refer occurs in the Japanese No play, *Aoi no Uye*, the account of the plot and passages from the play being taken almost verbatim from Mr. Waley's translation,<sup>1</sup> but their order rearranged and the explanatory footnotes brought into the text. For this reason I have thought it fair to Mr. Waley not to use quotation marks.

The Prime Minister's daughter, Princess Aoi, has fallen sick; to her is called the witch of Teruhi, a famous diviner who can make visible an evil spirit and tell if it be the spirit of a living man or dead. To understand what follows it is necessary to know that Prince Genji at the age of twelve went through the ceremony of marriage with Princess Aoi. When he was about sixteen he fell in love with Princess Rokujō, the widow of the Emperor's brother, about eight years older than himself. The lady Yūgao next engaged his affections. One night they had both fallen asleep. Suddenly the figure of a woman appeared at the bedside. "I have found you!" it cried. "What stranger is this that lies beside you? What treachery is this that you flaunt before my eyes?" And with these words the apparition stooped over the bed, and made as though to drag the sleeping girl from Genji's side.

Before dawn Yūgao was dead, stricken by the

<sup>1</sup> *The No Plays of Japan* (1921), pp. 179-189.

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"living phantom" of Rokujō, embodiment of her baleful jealousy.

Soon after this Genji became reconciled with his wife Aoi, but continued to visit Rokujō. One day, at the Kamo Festival, Aoi's way was blocked by another carriage. A scuffle ensued between her servants and those of Rokujō (for she was the occupant of the second carriage), in which Aoi's side prevailed. Rokujō's carriage was broken and Aoi's pushed into the front place. After the festival was over Aoi returned to the Prime Minister's house in high spirits, but she soon fell ill, and it is at this point that the play begins.

The scuffle over the coach supplies a coach-and-wheel motif which assumes a typically neurotic significance, thus:

The spirit of Rokujō speaking:—

*"In the three Coaches  
That travel on the Road of Law,  
I drove out of the Burning House. . . ."*

Rokujō has left the "Burning House," i.e. her material body. The "Three Coaches" are the toy coaches of a widely known "Burning House" parable:—

*"Is there no way to banish the broken coach  
That stands at Yūgao's door?"*

Once when Rokujō saw a coach from which all badges and distinctive decorations had been purposely stripped (hence, in a sense, a "broken coach") standing before Yūgao's door, she found out that it belonged to Genji.

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*"This world  
Is like the wheels of the little ox-cart ;  
Round and round they go . . . till vengeance comes.  
The Wheel of life turns like the wheel of a coach ;  
This time, too, I have come secretly."*

(As she went secretly in the Kamo Festival in a closed carriage.)

The Witch (in a trance): *"How strange! I see a fine lady whom I do not know riding in a broken coach. She clutches at the shafts of another coach from which the oxen have been unyoked. And in the second coach sits one who seems a new wife. The lady of the broken coach is weeping, weeping. It is a piteous sight."*

Here in Chinese and Japanese, the two most gifted peoples of the Yellow race, we have a dream with just such symbolism as we find among ourselves, and an account of a neuroses, with the selection and over-weighting of a part of the object which had played a dramatic part in the trouble originating the disease, so that it recurs in dream and trance, exactly as happens in the neuroses among ourselves. Indeed it is probably safe to hazard that the part played by the wheel is "overdetermined," i.e. is due not only to the trouble over the carriages, but is also to be referred to the idea and symbol of the wheel of the law, so prominent in Buddhist thought.

Nor is this all the evidence we can collect from dreams; further consideration naturally leads to the investigation of "type dreams" as offering a body of evidence of undoubted reliability. But

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since I have discussed this matter at some length in the address already referred to, I need here only indicate what is meant by a "type dream," and cite examples in a much condensed form. A study of dreams in which symbolism occurs shows that certain dreams recur so frequently, *i.e.* in so many different subjects belonging to races presenting no close genealogical relationship and exhibiting the most varied stages of civilization, all or many of whom attach the same meaning to them (though this meaning does not recapitulate the obvious content of the dream, but is truly a "latent" content), that such dreams may be regarded as "type" dreams. Examples are, *e.g.* the flying dream, and the loss of a tooth or teeth dream. Particular symbols may even be selected by special classes, *e.g.* the examination dream which, from inquiry, I know to be common in this country as it is on the Continent. The type dreams that I have examined are the tooth-losing dream, the flying dream, the climbing dream, and the dream of raw meat. The tooth-losing dream, recorded from Europe (north and central), Africa (Sudan, Ashanti), Asia (Palestine, Persia, the Nagas, in Malaysia, *i.e.* the Straits, Java, Achin, China and Japan), has everywhere the same significance. On present evidence this seems to be the most universal of type dreams, with everywhere the same interpretation, namely, the loss of a near relative or friend, though not infrequently there is a modification of meaning according to the particular tooth lost or whether it is in the upper or lower jaw. The records of the flying and climbing dreams also stretch from Europe to Japan, both betokening good luck or

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success. The raw meat dream, with a known distribution over somewhat the same area, is everywhere associated with misfortune and sometimes death.

There does not seem any possibility of transmission in instances such as the above; it cannot be thought that one people taught another to have a particular dream and that this dream was continued through the ages; it is scarcely less conceivable that one people should have imposed on many others, remote in race and culture, their own interpretation of a dream. Type dreams do, in fact, constitute a proof of the essentially common character of the Unconscious in divers races; they thus serve to indicate a common basis upon which groups of peoples in widely different races have within their own group developed the same difference of temperament or reaction, which we have called Introvert and Extravert.

And here I may say something more of a type dream of particular interest to which I have already referred, viz., the examination dream. It will be remembered that this dream, in which the subject has again to sit for an examination (almost always the final), is a recognized form of anxiety dream, and the fact that it is experienced in China by the *literati*, who have attained office as the result of an examination system at least as strenuous as that suffered by our own professional men and civil servants, is of the highest interest.<sup>1</sup> For here is a

<sup>1</sup> So high, indeed, that it seems well to give the evidence for China; Mr Z. L. Yih, of the School of Oriental Studies, first told me that educated Chinese do have this dream, while Dr Chi Li, of

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dream, so far as I know the only one occurring in both the West and the Far East, in which it is possible to point to the Unconscious of members of a particular class picking from their highly complex, and in a sense artificial environment, the same experience, applicable only to their class, to symbolize a condition of anxiety.

Passing to the so-called primitive peoples, time is lacking for anything more than a brief statement of my opinion of their reaction type. My experience of a considerable number of "native" peoples has led me to realize that dissociations of personality of definitely hysterical type occur far more frequently and are more easily brought about than among ourselves, while the instability of opinion (not custom) among savages and the ease with which an external diversion, a joke, or even a piece of showy rhetoric, may completely alter their action, is a commonplace among travellers. Nor are these characters limited to dwellers in the tropics; a widespread faculty for dissociation is found alike among the Esquimaux and the palæasiatic tribes of Siberia. Moreover, consideration of the "primitives," of whom I have first-hand experience, suggests that the extravert the Nankai University, kindly sent me the following answer to my question:—

"To dream that one has to pass the examination again after he has already passed it occurs quite commonly among the *literati*. I have obtained this information from my father, being himself a *litteratus* and having passed many stiff examinations in his younger days. But he could not give me any concrete description of any well-remembered dream that had actually occurred. He only assured me that this type of dream is very common."



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temperament may manifest itself under different forms. No one who has lived with the Papuo-Melanesians of the Central District of Papua (British New Guinea) will doubt that here is a whole series of strongly extravert groups, yet I have not observed ecstasy nor hysterical dissociation, though "possession" is said to occur, and I remember hearing of one instance in which it was definitely simulated. Of the Veddas, on the other hand, it might almost be said that every individual at one time or another passes into a dissociated condition, and the observer might be tempted to conclude that the latter are incomparably more extravert than the Papuo-Melanesians; it is, however, doubtful whether this conclusion would be a fair one.

In Africa the behaviour of the typical Negro, by which I mean the tribes of the West African Rain Forest, including the Azande (of whom I have some slight personal knowledge), and kindred tribes described by Schweinfurth, presents a temperamental *facies* distinctly extravert, and differs greatly from such Nilotic negroids as the Dinka (with their infusion of Hamitic blood), who show no interest in the white man and his contrivances, have no desire for clothes and the usual trade objects, are the most profoundly religious people that I know, and whose general behaviour is characterized by gravity and aloofness. Yet the Dinka are not free from hysterical dissociation, indeed something approaching a local epidemic has been described,<sup>1</sup> and their medicine men function only when in a condition of

<sup>1</sup> W. L. Mills, A Dinka Witch-Doctor, *Sudan Notes and Records*, vol. ii. (Cairo), 1919, pp. 31-34.

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dissociation, and would not be practitioners could they not readily assume this condition.

### *Conclusions.*

(1) The mode of thought of Primitive Peoples is not different to that of Europeans; so-called "pre-logical" traits, including "mystic participation," so far as they exist, occur or have occurred in every white race, the apparent differences in "native" thought and our own being due to the differences in premises or categories into which the "native" classifies his environment.

(2) Two classes of disposition or reaction type, which may conveniently be distinguished as Extravert and Introvert, occur in Europeans; these are perhaps most easily demonstrated in the arts, where they are associated with characteristic differences in painting and poetry.

(3) Of the three great European races the Nordic is definitely introvert, the Mediterranean extravert, while the Alpines are perhaps more introvert than extravert.

(4) These differences also exist between the two great civilized peoples of the Far East, the Japanese being extravert, and the Chinese relatively introvert.

(5) Dreams and neuroses indicate the essential similarity of the Unconscious and its reactions in Europeans and Mongols; especially is this evidence good for Chinese and Japanese.

(6) Primitive peoples are perhaps predominantly extravert.

# SOCIOLOGY

By L. T. HOBHOUSE, M.A., D.Litt., LL.D., F.B.A.,  
Professor of Sociology, University of London  
(School of Economics).

I. THE function of mind in social life is the central problem of sociology, the question to which other questions lead back, in the light of which all provisional answers must be reviewed. This truth has always been recognized in the philosophical treatment of society—as is but natural, seeing that in the differentiation of functions between philosophy and science, which is one of the regrettable developments of modern thought, the study of mind fell, in the main, to the side of the philosopher. It has not been so clearly recognized by those who have insisted on scientific method in sociology, partly because in emphasizing facts they wished to avoid valuations, and partly also because the introduction of mind disturbs the even march of mechanical determinism. But science is nothing if it does not face facts, and the only result of indentifying a scientific with a mechanical view of society is at once to raise the question whether there can be a science of society at all. If scientific and mechanical principles are convertible terms it follows that either mind is not a factor in the life of society, or that mind is itself reducible to terms of mechanism; or, lastly, that no

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science of society is possible. However much against its will, the scientific treatment of society is bound to pay attention to these questions, and in the result scientific sociology is forced to give much of its space to discussing whether it does itself exist or not. The question of mind, then, is the point of departure, and this whether we do or do not identify science with mechanics. Only, on the former view it is a point to be departed from, left behind; on the latter it is a point that remains the centre of operations. On either view the question of mind in society is the starting point, and we may say that it forms the link between the philosophy and the science of society.

2. It might have seemed impossible to ignore and difficult to exaggerate the importance of mind in social life, yet both feats have been accomplished, and not without a show of reason. Society consists of human beings, each a centre of mental activity, of thoughts and feelings, passions, desires, joys and sorrows. The life of society is broadly the plexus of relations in which these beings move, and to common sense it seems clear that they move each in accordance with the prompting of some or all of those internal factors which together constitute their minds. True, they have bodily needs which must be met if they are to live, but even the bodily need must take the shape of some impulse in order to determine action, and as impulse it enters into the life of mind and comes up against all the other impulses and instincts by which mind is thronged. Particularly in relation to our fellows mental factors seem to predominate. We must understand them

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in order to act with, or even for that matter to act against, them with any degree of success. Thus in social relations mind appears the dominating factor and body an instrument or at most a source of certain stimuli. Again, it is true that society must have a physical environment, but to common sense this is still more clearly an external. No doubt it is an external with which man has to make terms—either by accommodating himself to the environment or altering the environment to suit his own needs. But the constituent elements of a society are human beings, and not stocks and stones and trees. The stocks and stones and trees may have had a great deal to do with the shaping of the human beings and their relations. Their influence must be taken into account when we are asking how it comes about that such and such a proportion of them are working on farms or in mines or in factories, or within the network of world commerce. But still it is the men who have to deal with the conditions who constitute a society, and the way in which they have dealt with them and turned them to their uses which has made the society what it is. Whatever the effect of the environment, and I would not at all depreciate it, it does not act as a purely independent cause, but in relation to the minds of men, in particular to their industrial and scientific equipment. What is barren soil to the savage may be rich in minerals to the civilized man. What is, and at one stage must remain, waste, may with some advance of enterprise become rich agricultural land. Even position may for social purposes be radically altered, as, with the development of oceanic trade, the British, once

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"utterly cut off from the whole world," found themselves in the centre of communications. It is the truth that the problem set by environmental difficulties may itself have been the stimulus to invention; but the stimulus must find a response if anything is to come of it, and the response implies a mind on whose energy, resourcefulness and equipment the result depends.

3. Mind, then, might seem to occupy a central if not a dominating position in the life of society; but there is another side to the shield. From some points of view the structure and movement of society seem less like the creation of mind than the work of one of those massive natural forces which even modern science meekly accepts without seeking to control. From the point of view of the individual his life seems to be caught up in the social machine. He has his needs, his desires, his personal loves and ambitions. But if he would gratify them, even if he would merely find food and shelter, he must fill a place in a system not of his making, in relation to which he is for the most part a mere cog on a wheel. If he will not fill his part as a cog, the great machine just rolls on with a bare momentary jolt which is the passing of its weight over his body. He is in the hands of forces which he can but dimly understand and in no way control. If we turn from the average man to the more powerful, who might be thought to have their hands on the machine, we find much less difference than appears on the surface. Analysis of their careers, often their own candid reflexions, tell us that even the greatest leaders were rather parts than initiators of the movement with

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which they have been identified, and many of them have acutely felt their helplessness in the vast and complex movement of affairs. Reaction may, indeed, lead them or their historian to minimize unduly an influence which, at the first blush, we all exaggerate. Individuals do count, and great ones (this is surely good mechanics) count more than small ones. Still, in the end it is true that the tide of human life carries us all in its movement. We are launched in it from birth and, if we would do anything to dam or canalize it, all our efforts must be made from within. Who, then, gave it initial direction? What mind, if not a mind like ours? Or was it no mind at all but some vital impulse, blowing whither it listeth, without purposed direction; or the still blinder force of mechanical determinism?

4. Some would answer these questions by assuming a mind in society which is not merely the set of individual minds personal to the members of the society. To the individual they see that society presents itself as a vast structure which he but partially comprehends and does not pretend to control. Yet they also see that mind counts for a great deal in the structure of society; that even in an imperfect social system there are elements of rational order, implied for example in the mere fact that people can understand one another, know what to expect of others and what is expected of them, and so can co-operate and exchange services and live in peace. The idealist school regarded this sort of rationality which they found embodied particularly in State institutions as an Objective Reason, which Hegel in particular contrasted with the Subjective Reason, consisting of

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such poor thoughts as the individual might work out by his own efforts on the basis of his own experience, much to the disadvantage of the latter. Subjective reasoning, though it might include the work of deep thinkers, was the road to revolution and anarchy, while the objective reason upheld the social fabric. But Hegel recognized the ultimate necessity of a synthesis of the subjective and objective. The social fabric, he thought, must rest on Will, and on a will immune from the self-interest and partiality of individuals. The best systematic exposition of such a general will was given by Dr. Bosanquet, who identified it with the Real Will of each of us, which is the will purged of inconsistencies, reduced to rational coherence, and so manifesting not the incongruities and narrownesses but the underlying harmonies of social life. I cannot pretend to do justice to this theory here; merely to state it adequately without criticism would occupy all the time I have at my command, and it is only one of the conceptions which I must bring under review. I must therefore content myself with indicating briefly where I think its strength and weakness lie.

5. With a conception of a certain rationality at the core of will, then, I am in full sympathy, and I recognize its practical expression in the ideal which bids me love my neighbour as myself. It is not a merely intellectual principle, like that of a mathematical axiom; nor, I am sure, did Dr. Bosanquet or any of his school suppose it to be such. It is a practical principle, an expression of will not creating but pervading and harmonizing emotions and sentiments, and giving them coherent



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meaning and purpose.<sup>1</sup> So far we travel the same road, but apart from certain metaphysical objections with which I shall not trouble you, I find myself parting company when I reach the embodiments of this real and rational will in the fabric of organized society. In the first place I do not know of any organized society whose institutions can be regarded purely as embodiments of objective reason. It is true, it has already been said, that there are rational elements involved in them, but I am afraid that there are also very irrational elements, that law and custom and the social fabric are the outcome not of reason in especial but of the whole of that remarkable and contradictory mixture which is human nature; that the passions, the sectional interests, the partialities which strive with one another have all played their part in the result as we see it at any moment and in any place, and that this result in general represents rather some compromise or adjustment of conflicting forces than the kind of consistent and comprehensive system which one would attribute to reason. Of course idealists, like others, are aware of imperfections in society, but speaking generally not of states but of the State, they seem to regard the rational ideal as a central type from which there might be minor deflections on the right hand or the left, but which was still clearly recognizable in the states which we know. This view does not seem to me to correspond to what is known of the genesis or of the actual fabric of organized societies. I cannot, in fact, think of social life as sustained by a unitary mind having the collective well-being for its object in the sense in which my life is guided by a unitary

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mind to which my well-being is an object. On the contrary, this view places the whole problem of social psychology on a wrong basis. Such a mind in the fullness of its scope should find its place, if anywhere, rather at the summit than at the foundation. We should think of it not as a unit embracing individuals *effectually from the first*, but rather as a harmony in which all the wealth of individuality might in the fullness of development find expression. We should admit a filament of union inherent in the human will, but we should regard the growth of such a filament into an effective force operating on the great scale as a development never yet adequately realized and depending, among other things, on the free exercise of that subjective criticism which treats the objective reason of established institutions so cavalierly. In the fabric of organized society as such, then, I see nothing of reason beyond its bare rudiments, and I see social growth, not as a series of incarnations of reason, but as a struggle for existence on the part of these rudiments among the complex and irrational forces which actuate social life. Neither can I understand why the State (equated with the fabric of organized society) should be picked out as the peculiar embodiment of the rational will. The relations of men and women go beyond the State, and it is highly necessary that reason and morality should not stop at the frontier. Civilized States have to deal with one another. They and their citizens have to deal with weaker and more ignorant peoples. The idealist will find himself in very strange company if he denies all common obligations in those spheres. For morals and religion alike, State limitations are indifferent.

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6. Psychologically there is nothing unique in the kind of unity operating in the State. There is a generic unity in all social groups. No doubt it has many species, emotional and fleeting in a crowd, stable and deeply rooted in personal affections and vital needs in a family, based on community of interests and the advantages of co-operation in a business organization, founded on a complex of sentiments, interests, traditions, compromises in a large community. Such differences are well brought out by Dr. M'Dougall in his work on *The Group Mind*, which has the great merit of transferring the whole question from the metaphysical to the scientific plane and enabling us to think of many kinds of Group Mind of many degrees of rationality, extent and effectiveness. But there is, to my thinking, something common to all groups which parts their psychology from that of the individual who composes them. It is this very fact that individuals do compose them. I do not deny unity of groups; I do not deny that such unity is often very real and important; I do not deny that where most real and important it is mainly of a psychological character, *i.e.* rests on sentiments, desires, mutual understanding and so forth. I do not deny that such groups often have common objects, desired by each member for the group and achieved by their co-operation. I do not deny that the group may present special psychological characteristics, that one group may be resolute and another vacillating, one vindictive, another placable and so on; and that one and the same group may exhibit variations in these characteristics, just as the individual changes his mood.

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All these features of group life draw it close to that of the individual. In group psychology, as in individual psychology, there is a true unity and a distinctive character. But still I do deny that the unity of the group can be identified with the unity of the individual. Not that the unity of the individual is something simple and transparent. It is the complex and subtle unity of personality, far too complex and subtle for any attempted definition here, but admitting of the selection of one or two points for emphasis. In the first place, then, in personality there is an element altogether private and peculiar to the one being within whose experience it falls. I do not refer only to those depths which we never finally sound, whether in ourselves or in others, but merely to common, broad daylight experiences (my aches and pains, for example, which you may regard sympathetically but cannot possibly share). In the second place, this privacy is associated with and dependent on bodily separateness, so that if we have pathological cases of dual personality in the same body, we find the privacy incomplete, and possibilities of sharing by one personality in the memories of the other. Now the unity of the group is not that of one physical body and it does not share these privacies. There may be affections and sympathies which render the feelings of one very important to another. There may be community of feeling in the sense that A and B feel just alike about the same thing; but yet there are two feelings—A's and B's—and the relation between them is that of common character or resemblance or co-operation, not that of identity, or location in the same

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body and the same series of experiences. I would emphasize, therefore, that however real and important the psychological unity of a group, it is not the same sort of unity as that of a person, and apart from popular and *prima facie* description, I would avoid all terms which imply the contrary.

7. It is important to realize that in dealing with mind in society we are dealing with the inter-relations and interactions of minds. If, for example, we speak of the British character, or the war mind, or the spirit of the Victorian age, we must keep steadily before us that whatever reality there is in these phrases (and there is reality in some of them) is to be found not in an individual but in some generic character or tendency operating in many, perhaps millions, perhaps generations, of individuals. The British character, for example, is caricatured as an individual, John Bull. John Bull has no more existence than any other abstract universal, and great mistakes, and often unjustifiable prejudices and irrational hatreds, are aroused by taking any chance Englishman as one of the incarnations of that universal; or, conversely, by seeing the characters in which the type is dressed up in every act or utterance of any Englishman. The war mind, again, is a very terrible reality, but it is not the mind of an individual Bellona. It is a way of thinking, or, rather, of not thinking, which possesses many people under the influence of war, and which is created and sustained by the action of mind on mind, by the suppression of truth, the distortion of fact, the resentment of A against the slightest symptom of fairness or generosity in the mind of B, in the broad

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fact that we play up to one another and encourage one another in imputing the worst and stifling in each other all germs of criticism. The spirit of the Victorian period is something less palpable, and perhaps more often described with confidence than with clarity or consistency. But if there is a correspondent reality it is, I take it, of the nature of a predominance over a period of certain ways of looking at things, the prevalence of certain assumptions, the influence of certain scientific ideas or certain literary creations. These influences may constitute a certain kind of unity, though it must be clear that its beginnings and end are very vague. But as clearly the unity is not that of personality. It is at most such unity of character as results from a certain turn given to the minds of many, passed on and reinforced in the passage, producing results in science, politics, art and literature, in which we may, perhaps, discover something distinctive. But nothing could be more misleading than the syllogism, such and such is a Victorian characteristic; this man (*e.g.* Carlyle, Macaulay, Newman, Herbert Spencer, Dickens, Trollope, Gladstone, Disraeli) was a Victorian, therefore he had that character. The Victorian characteristic is something that results from the personalities of such men and, indeed, of the unconsidered millions among whom they lived. In some of them we may trace one or other of these characteristics with more or less of clarity, but essentially we are dealing with tendencies, shades, effects of the minds of many acting on one another through a period.

We must understand, then, that the operation of mind in society is not that of a unitary mind,

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imputable to a personality. It is the operation of many minds in various relations with one another, and though the social group may have a very real unity and even a psychological unity, it is not the unity of one person, but a unity in the relations of many persons. Each person, in spite of his close relation to others, is a distinct centre of experience, of interests, of desires. He touches the world at his own distinctive point, never quite the same as that of any one else. He brings his own individual nature, never cut with precision to any universal pattern, to bear on the social life. Roughly he fits in with the rest, or may be brought to do so by a little pressure. But the fit is not exact, and there is always a danger that the pressure may distort and maim, and whereas in the development of personality, unity is the greatest thing, and the mastery of impulse the most essential, in the development of society, the excess of control is barely preferable to anarchy; individuality has its value, and the society which does not recognize it is in danger of stagnation.

8. Still, in any peacefully organized group that holds together, we may in general assume a certain psychological unity. Its members understand one another, deal with one another, recognize one another's ways, even if, like men of different castes or different religions, they do not share them. The only exception to the rule would seem to be that of sheer military domination by an alien race which, if it does not produce some kind of psychological understanding, necessarily lasts only as long as the force holds good, and sometimes only to the limits of the encampment. Force apart, then, some

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measure of psychological unity may be supposed in any durable group, but the union may vary in any degree both of extension and intension. In general the closest union is that of the personal relations of kinship and affection, as in the family. Here interests may be so nearly identical and mutual feeling so keen and constant that for many purposes the little group does act as one man, and the analogies to a single personality are much less forced. As we pass to wider groups the strands of unity weaken and diversities of position, conflicts of interest, differences of tradition and consequent misunderstandings, fears and suspicions, make themselves felt. It requires a certain maturity of mind to overcome such differences and to recognize the common humanity and the underlying interests beneath them. Often unity in the shape of peaceful intercourse and mutual restraint can only be imposed mechanically from above, yet the actual habit of intercourse has its effect; it tends to generate the community of mind which its effective working requires, and large and diversified populations may grow into one almost against their will. Even mutual fear must not be left out of account. Men may support the common authority because without it a worse would befall them, and though Hobbes was far wrong in taking this as the sole basis of organized government, I would not like to affirm that it has never been a factor in the support of political authority. It is, at the present time, a factor in the development of the League of Nations. Any such unity is, however, transitional and precarious. Unless and until it develops some real community of interest, sentiment and loyalty, it



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is at the mercy of accidents. Such community arises spontaneously in the family life and in the personal relations of friendship and comradeship. On the great scale it is a product of individual development and of relatively high mentality. Nor is it possible, nor even desirable, unless it takes a form which allows considerable latitude for the divergences which must make themselves felt in huge populations, even if of homogeneous origin and history. It is a mark of the general development of mind that such unities have been effectively formed on that relatively large scale which we call national, and that super-national unities, including populations of diverse tradition, language and race, are not wholly ineffective, nor based merely on the authority of force.

9. In the extension of effective society, then, we recognize a growth of mind. Yet we have insisted that the vehicle of mind is the individual, and we must ask whether there is not something of a paradox here. The minds of individuals do not seem to develop in faculty through the generations. There is no proof that human faculty, if by that we mean the average natural endowment of individual capacity, has undergone any notable extension in the historical period. There may be a real biological change distinguishing the men of the later Palæolithic from the men of the earlier periods, but with the appearance of the Cro-Magnon race man is thought to have attained his full normal stature as an individual. Perhaps there may be some exaggeration here, for our knowledge is really fragmentary and for the most part indirect. We need not deny the possibility of some modifications of faculty, but all appearances

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suggest that whatever these may be they are very small and slow in comparison with the drastic and often-repeated changes of social life and of the whole output of the developed peoples in science, industry, philosophy, religion, the political and social structure. For the immediate purpose we need not ask whether these changes are for the good or not. All for the good we cannot consider them, for there is generally some loss in attendance upon gain. But when we are considering the relative efficacy of the two factors of biological heredity on the one side and the continuous operation of the sociological fabric on the other, the first question is, where change occurs, and the answer to that is clearly that it is in the fabric rather than in the individuals before they come under its influence. The fabric of English life has gone through a swift succession of changes from the middle of the eighteenth century to the present day, and these changes are social products. In particular they turn on a vast increase in the knowledge of and consequent power over nature. No one supposes that the individual of the twentieth century inherits physically any more of such knowledge or power than his great-great-grandfather possessed when in his cradle. What he inherits is the ideas and all the applications of ideas effected by his great-great-grandfather, and the men of the intervening generations, and these he inherits not physically by descent but socially by entering into the society which is familiar with those ideas and applications. Some think that, owing to the multiplication of the inefficient, average capacity has even declined. I would not assume anything as certain in a matter

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so difficult to measure, but I will put the case in these terms. No increase of average capacity is required to explain the growth of applied sciences; it is sufficiently explained by the cumulative effect of each discovery added to the original stock of experience and the stimulus given by it to further investigation. It requires no more genius to take the second step or the third step or the  $n$ th, than to take the first. It may be misleading to say that it requires less, but it does not necessarily require more. I do not know whether Einstein is a greater or lesser genius than Newton, but if greater it is not because his theory is more accurate and of wider scope. If his theory has this superiority, that is due not to Einstein alone, but to Gauss and Riemann and Clerk Maxwell and Hertz and, in fine, to all the development of mathematical physics between the seventeenth and twentieth centuries. The product is social.

Here, then, comes the element of paradox. We maintain that the mind is in individuals and that the social fabric is the network of their relations or interactions. We also maintain that this fabric, which in any concrete view includes the order of philosophic and scientific ideas and their applications, rests on mind, and owes its development to the development of mind. Yet we do not allow that the development implies any corresponding increase of individual faculty. This is an apparent paradox, but not a contradiction. Einstein's mind was no doubt of great original capacity. Let us suppose that it was equal to Newton's. What had Newton before him as he grew up? What ideas to be assimilated, what

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mathematical methods ready to his hand, what scientific instruments, what proven results of observation? He had such as the seventeenth century provided. With this equipment he worked out his ideas and the developed mind of Newton was such as this operation achieved. Einstein had the ideas and the equipment of the twentieth century, and the developed mind of Einstein is what he has made it by operating on this very different material with this very different equipment. The original capacity may be the same, but the result is different. The minds of individuals as they come to be are socially conditioned. I do not say that they are made by society. There is interaction. Every individual brings in something and is not a purely passive recipient, but makes his own personality as he grows. But he makes it in response to the social milieu. And so the England of to-day with its great differences from the England of George II., is reflected in Englishmen who are materially different in their outlook, in education, in the traditions behind them. These differences grow about a stem of continuous identity and yet are real and their source is in the main social, the operation of the milieu, which is in the last resort the operation of mind on mind. The continuing social tradition is carried by men. If the men were exterminated the tradition would vanish, and its existence might only be recoverable by the future investigator as we recover the fabric of pre-dynastic Egypt. Yet to any one man it is primarily something external, and it is only by his reactions that he assimilates and perhaps goes beyond it. Hence if the term "social mind" is a metaphor, it

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does symbolize something real (a tradition, a body of ideas, institutions, equipment) carried by numbers of individuals, not specially dependent on any one of them. I prefer on the whole to drop the expression as lending itself to false interpretations and oversimplifying the problem of development, but I would insist none the less emphatically on the importance of the tradition, the fabric enduring through the generations, which is the basis of whatever great and permanent advances have been made in the world of mind.

10. Thus if mind maintains and develops the life of society, it is equally true that society is the means of growth for mind. It might here be asked whether there is anything essential in society but mind, and whether psychology and sociology should not collapse into one science? This is to go too fast. In the first place there is the environment to be considered, and not only the physical but, for any given community, the political and social environment. In the second place, the effects of human actions are not merely psychological, whatever their cause may be. A single illustration will show how far this takes the analysis of social facts beyond the province which any psychologist would care to claim. When a man buys food to satisfy his appetite the governing force is psychological and personal. The price that he has to pay for the food is determined by a complex of factors, most of which again might individually be reduced to simple psychological elements as operating on available supplies of material. But the interaction of these factors constitutes a distinctive problem in which relative numbers come into the

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foreground. How many mouths are there to be filled; how many want food of a particular kind; what efforts or sacrifices will they make to obtain it; what substitute foods are there; who can be set to work to produce them; what means are there of communicating changes of demand and bringing them to bear on supply? We might easily extend the list of questions, but the illustrations are sufficient to show that if you would explain so simple but important a fact as that I can get a reasonably good tea of a simple kind for sixpence in the Strand, you have to take account of a congeries of facts of immense ramifications, some purely physical, some psychological, but all essentially to be taken in their relations with one another. The number of people who will pay just sixpence for their tea is not explicable on psychological grounds alone. It is a result of economic conditions, which gives the sum of sixpence a certain value in relation to the spending power of the people who find themselves in the neighbourhood of the Strand at that time of the afternoon when the inner man calls for support, and though there is a psychological factor at work in each separate tea-drinker, the result—even if we were to ignore the physical factors—would still be determined by numerical relations between different desires in different people, the operation of which psychology alone would not attempt to explain. Thus if the customer's request for tea has a simple psychological determinant, the price that he pays is a sociological fact dependent on the manner in which the relative numbers of different people and different wants balance up in the long run. Economics may

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be said to start with the fact that men have desires which they seek to gratify with the least possible sacrifice, but the complex results to which this simple principle will work out in a great society require a separate science to study them, and that science is a study of the interactions of men and their effects; that is, it is sociological. I am far from suggesting that psychology may not have a more intimate part to play in economics than this. I do not think that the simple proposition advanced above is the only contribution that psychology has to make. On the contrary the question how far men are motivated by the desire for gain, how far by custom and inertia, how far by sentiments of comradeship, loyalty, of the common good—these and similar questions, mainly psychological, are of real importance and have too often been ignored. I am only saying that whatever the psychology of individuals, the play of psychological forces in the mass and the results of their interaction are distinctively sociological. Nor is this mass action easily or directly controlled. On the contrary, it is just here in the operation of numbers that we get that sense of an overbearing momentum in social movement against which the individual will seem helpless. Astute men may perhaps at some point give a turn to the tide of fashion, but the tide once set, what merit, what exertion, can withstand it? Certainly not any effort of those who are borne along in it. The intelligent control of society is a more complex problem than any control of the physical order, and it is a painfully familiar truth that the advance made by the modern mind in the control of material conditions has by no means been

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matched in the field of social conditions. A million minds disposing of all the marvels of applied science for their separate purposes, are not the same thing as one mind disposing of those powers for the common good. Thus, however much mind-factors may penetrate social life, they will not direct society unless they are in some fashion united in pursuit of a common end. How does this union germinate and develop and what are the conditions and extent of its guiding power ?

11. There are two main lines on which men have conceived such direction. One lies in the specialization of authority. In law, government and religion, there might be a hierarchy of picked men with the wisest at their head, who, partly by reliance on traditional lore, partly by superiority of caste and personal endowment, would have the wisdom and the virtue required for the ordinance of men, the majority of whom, within the limits laid down for them, would continue to pursue their individual interests without concerning themselves about the common welfare. This is the aristocratic view in the best sense of that term, and it clearly contains a measure of truth. The ordering of society is a complex task, the more so as society develops. If it rests on broad principles which might be made generally intelligible, it also requires special knowledge which involves expert understanding; and the plain man finds it difficult enough to deal with his own life, without going into all the remote issues which none the less are of vital concern to the community. There is need for direction by men who give special attention to public affairs, and for men of more than



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average devotion to the common well-being. On the other hand, there are definite limitations to the kind of well-being that can be achieved on these lines, and, indeed, if we carry them through to the end and suppose all direction concentrated in the hands of the few, while the many are indifferent and, therefore, wherever guidance interferes with their personal interests, hostile, we have a society which, at its best, would be a drove of cattle and which, as men are not cattle, would not, in fact, work. Government, whether religious or political, must in the long run accommodate itself to the nature of the men who are governed. This opens the alternative democratic line of advance, which sees in average human nature those elements of regard for a social well-being on which we insisted when repudiating the metaphysical theory of the general will. These elements are complex, involving personal and family affections, the sense of comradeship and neighbourhood, a more general and diffused impulse of sympathy with distress, and running through and beyond these, obscure and confused in its emotional origin, but having the whole force of reason behind its development, the sense of relation to a whole beyond ourselves, in isolation from which we are lost and our lives are frustrate. Such elements of morals and religion exist in all normal people, though their coherent systematic statement may tax the utmost efforts of the thinker, and still await a completely satisfactory formula. But, however incompletely rationalized, they are there in ordinary folk, a potential basis of response to the demands of the common good, ready to be enlisted in support of those who make plain

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what its demands are. These elements in man in general, then, are the support of the ethico-religious systems whose function on the democratic view is not so much to impose themselves as external authorities on the ignorant as to bring the normal social factors in human nature to a clearer sense of their own meaning, and enlist their co-operation in the control of the common life. The importance of the aristocratic factor must remain, for it is the leading minds that make the advance and show the way. But the leading minds themselves have to learn that their heaviest task is to inspire and convince rather than to order and coerce. This condition necessarily makes the path of advance more devious and arduous than it would otherwise be. For it implies liberty, and liberty is the opportunity of error as well as truth. Yet experience and the analysis of the human good combine to show that it is the only sound way.

12. If we suppose a common purpose reached on these lines, what are the limitations of its power, how far could it really effect its aim and actually determine the life of society? We may best answer these questions by considering the conditions of success in any purpose which we set before ourselves. First of these is that the object should be clearly defined. We should know what we are after. In the present case, then, we must know what the end of social life is, *i.e.* we must understand the common good. Secondly, the purpose must be self-consistent. If it involves a number of conditions they must all hang together. If one conflicts with another our efforts will be frustrate. Here there is grave difficulty for social

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purpose. I will take one point only. What is the common good? Doubtless the good of some community. But what community? Suppose we say our country; can we then regard our country's good alone; can we push it ruthlessly against the good of other countries? Some have had the courage to say yes, and to go through with the logical consequence to the end. But the answer is in conflict with those fundamental principles which underlie the very sense of a common good, and when these are expanded by rational treatment they teach us that ultimately we have to regard all humanity as morally one community and that unless we do so we get into conflicts and contradictions of a disastrous nature which will bring our narrower object to self-frustration. Again, the common good must be something really common to the members of the community; *i.e.* it is not a purely corporate or collective end in which individual human beings do not share. It must be something which develops personality and enlarges individual life. Only the enlargement of A must not be such as involves the crippling of B. There must be consistency in the practical operation of the ideal; *i.e.* there must be harmony. Thus increases of aggregate wealth or of national power which from the point of view of the collectivity look grand and imposing, may be of very small social value if they do not go with the diffusion of wealth (or a rational application of common resources) and an enlarged opportunity for individuals. A coherent social purpose must avoid the pitfalls illustrated here. That is, it must understand its object and the conditions on which it depends, or, like any other

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purpose which fails on those heads, it will be brought to nought.

13. Lastly, a purpose, to succeed, must necessarily control the conditions which are its means. How far has the purpose of social well-being such control? The answer must differ in accordance with each condition that we are considering. In the first place, there are physical and biological conditions of well-being. Over these the power of human purpose will certainly never be absolute, but it is in rapid growth and the problem now before us is not so much that of its further extension, which is going on of itself with constant acceleration, but of utilizing it for the best common ends. But here arise questions which bring up the psychological and social conditions which are the real point of difficulty. Does not social improvement defeat itself? The argument has been pressed from the point of view of social biology (if the term may be allowed), and that in two forms. For two or three generations following Malthus it was very seriously argued that gain of material wealth defeats itself by stimulating a growth of population, which devours all the increase of substance and leaves the mass of men as poor as before. This objection has really been defeated by the fall in the birth rate which shows that increased prosperity is not a *progressive* cause of multiplication, but rather a *steadying* factor. The argument then took another shape. Stress was laid on differential fertility. The careless and worthless multiply while those who would make the best parents go childless. Humanitarian legislation in particular is blamed, and we discern the accents of the ratepayer and even the

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super-taxpayer in the voice of the man of science. Personally, I am not much impressed by eugenic jeremiads. I do not think that the subject has so far emancipated itself from the atmosphere of class and racial conflict as to render possible the discussion of the facts in a dry light. But I am not concerned with that controversy. If and so far as the eugenists convince me of their diagnosis, I shall agree that the eugenic methods are necessary, though not, I trust, in the crude forms sometimes quite seriously proposed. I am content to say that it is within the resources of civilization to deal with this difficulty if real, and to deal with it by civilized means.

14. After the physical and biological conditions come the psychological and social, and as to these I will put one doubt which seems to me more serious than those suggested by the biologists. Is man really big enough to master the huge machines that he has created? Modern locomotion has brought all the world together. There was enough moral wisdom to organize great nations such as England or France on the basis of internal peace, but it was a difficult task which took centuries of effort. Is there enough moral wisdom to organize a world society to enable the European, the Hindu, the Chinese, the Negro to live together on tolerable terms, to overcome their vast diversities of tradition, language and race, to curb the rapacity of unscrupulous men, to control exploitation and close the door on war? We cannot with any certainty affirm that there is moral wisdom enough, but we can with assurance say that it is wholly a question of the enough. Given an adequate moral development, there is here no hard

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stone of obstruction on which it must break its teeth. We have to educate ourselves, and that is all there is to be said. We can succeed if we choose, but enough of us must so choose.

15. Leaving prophecy alone, we may content ourselves with affirming that mind has in its power now many of the conditions for directing social development, and that involves its own development, since, as we have seen, the human mind lives in and by a social world. In this relation, distinct science as it is, sociology adds a chapter to comparative psychology. It is our principal witness for the later phases of the development of mental life and its results fall in well enough with the earlier portions of the story. We trace the elements of mind in the co-ordination of behaviour far down the animal scale. There is, no doubt, co-ordinated behaviour, like that of a mechanical reflex, which does not involve mind. But there have been only two methods suggested hitherto by which we can explain the co-ordination of behaviour with the complex requirements of race maintenance. These are, first, the inheritance by the individual of a structure which has evolved by stages, under conditions which have secured the preponderant survival of those whose reactions to the environment were best suited to the maintenance of their lives and the production and preservation of offspring. This mode of explanation is still incomplete, for the origin of the favourable variations remains obscure. But there is no reason to doubt that the fruitful course of investigation into the origin of physical structure lies along these lines. This mode of explaining behaviour, however, has its definite limits. It may

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ultimately show how very highly organized structures have arisen, which even in complex conditions yield the type-responses which on the whole are the best suited to maintain the stock; but it does not explain well-adapted departures from type, the origination of new modes of behaviour, combinations and inventions which are without precedent in ancestry. Such origination is explicable by a factor which can bring the action of the moment into relation with schemes that cover the future, and no other method of explaining it is known. Of the existence of such a factor we have direct evidence in our plans, purposes and efforts, and we call it mind. A Behaviourist who objects to the evidence of consciousness and to the use of the term mind or of any term which implies its operation may if he pleases cut out all such terms; but if he faces the facts of behaviour with candour, he will have to admit the generic difference between the machine which responds to every situation with a type-action, and the man who arranges situations in a manner which freely modifies and often radically departs from type. If with that appetite for the miraculous which distinguishes certain forms of modern science, we suppose a machine which can make good its own deficiencies and invent novel modes of action, we are not merely creating from the imagination something which no experience gives us, but are using terms in a sense which contradicts their origin. For the idea of the mechanical is merely the generalized abstraction of uniform response to present conditions in which the relation to the outcome plays no part, while the idea of purpose is reversely the generalization of that kind of action

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in which relation to the outcome does play a part. If we had no evidence of purposive action in our consciousness, but were lookers on from another sphere of being, and were also candid, we should recognize in the play of organized beings in the world two generic types of behaviour, and if we knew nothing of mind "in itself" we should in the dispassionate study of the second of these types find all those relations which are in fact ordinarily described in mental terms. We should require a complete terminology, with a word for word correspondence to our present psychological terminology for the disinterested description of the facts. What is more, we should find in the second type just as much coherence and consistency of principle as in the first type. We should find systems of highly organized behaviour, and we should find the ultimate differentiation between them reducible to the distinction stated above between the mechanical and the purposive. We should then require a generic name for each system. We might call one of them abracadabra if that suited the mysticism of mechanics better than the familiar "mind." But we should have to call it by some name, and we should have to trace the development of this system from its lowly rudiments upwards. The methodological difference involved in the excision of the term mind is then very much slighter than those who dislike the term imagine. It would entail a more cumbrous terminology and a refusal to recognize some very obvious evidence; but that is all. The obvious evidence to which I refer is that I am just as much aware of my ideas, plans and efforts as I am of my physical actions,



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and I learn by the result, if not by immediate consciousness, that my behaviour is different when I act on a plan from what it is when I act without a plan. It is in such phenomena that I learn the general meaning of the term mind, and my extension of this term to phenomena which exhibit the same general principle, and its refusal to those which exhibit contrary principles is perfectly consequent and logical.

16. The objection to the conception of mind as an operative factor in life is founded on the opinion that it threatens the continuity of material causation. The conception of matter, however, is itself going through a difficult time just now, and as it is not within my competence to deal with these difficulties it will be better to substitute the term mechanical. Now the ideas used, whether in the classical or the new mechanics, are confessedly abstractions from experience; abstractions, moreover, rarefied as mechanical science advances. There is no pretence that these abstractions represent the whole of reality. What has been found is that by their use, equations may be established which hold good within the limits of experimental error. These equations at best represent certain relations of things or events. They are far from representing the whole. I make bold to say that no known dynamical equations explain the concrete behaviour of a caterpillar, let alone a poet. They apply to certain of the changes which the tissue of the caterpillar undergoes, e.g. the fact that the potential energy which remains to the caterpillar when it has climbed to the top of a plant is the difference between the potential energy which it

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had at the bottom and that which it has expended in kinetic energy less the gain accruing from the more elevated position. All this tells us nothing at all about the factors directing the caterpillar in the particular conversions of potential into kinetic energy which it has effected. There is not the least reason to infer, and there is adequate reason to deny, that concrete reality is exhausted by its mechanical aspects.

On the other hand, if we consider mind and mechanism as fundamentally opposed modes of operation, it would, we must admit, be a contradiction to suggest that one originated from the other, but the just inference is not that mind is an epi-phenomenon (which merely slurs over without removing the contradiction), but that mind is not derived from matter or from anything mechanical, but is underivative, in fact an original element of reality. As such we cannot suppose it limited to the organic world, but it is through this world that it becomes most effective, and, therefore, clearest to our observation. Comparative psychology traces it far down the organic scale, and, I think, on the fairest interpretation of the evidence, to some at least of the protozoa. It is a reasonable inference, with the arguments for and against which I must not trouble you here, that in a lowly form mind is in fact co-extensive with life, in the sense that within the lowest organisms there are mind-factors present, though they have neither the energy nor the coherence that constitute the working individuality of higher organisms. On the principle on which I am arguing there must, as has been said, be mind altogether beyond the organic creation, but

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on the evidence of behaviour there is no distinctive mind in the stone as, again on the evidence of behaviour, there is mind in a very lowly form in the worm which turns (and turns, after some trial and error, the right way). As we mount the organic scale the evidence of correlation in behaviour becomes more definite and individuality more marked from an early stage. One would suppose that the earliest behaviour is adjusted to the maintaining of the stock, as much as to that of the individual. Indeed, the latter need as the more comprehensive must be regarded as the governing factor. As individuality develops it is a potential menace to the race which is met by the shaping, race-regarding impulses into more definite systems of behaviour, directed by the presence of other individuals, the young, the mate, other members of the herd. But within the animal world mind works on foundations given by heredity, and its functions are confined to such adjustments of detail as best satisfy given impulse. With the development of more articulate perceptions there arise data for the formation of ideas by means of which mind is able to transform the cries which already have a limited significance into words of which an intelligible synthesis can be made without the necessity of a direct perceptual basis. By inter-communication ideas are liberated and formed into systems which are the common possession of a group and which, being handed on, form a second basis of life additional to that of physical heredity, and on the whole within the scope of consciousness.

17. From this point onwards the advance of mind is, as we have urged, due rather to social than bio-

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logical causes. The simplest peoples that we know have their codes which are on the whole well-observed, and I think we may say that they also have their theories of the codes in magical or spiritual terms. Naturally, the mind does not at this stage criticize the basis of its operations, but that process arises when its operations have gone far enough to raise contradictions and give it confidence enough to face and try to solve them. It then begins to form theories of nature, and not only of physical nature, but of its own nature, purposes and possibilities, and so we reach the higher ethics and religions as well as the sciences and philosophies. In the best of these we know that we are very far from final truth, but we do see the mind getting down to the basis of physical heredity and social tradition on which it had hitherto unconsciously worked. We see it taking stock of the conditions which have made it what it is and shaping its unreasoned impulses and semi-instinctive purposes into comprehensive and rational ends. We see it by the same critical methods enlarging its control of nature and its powers of social organization. Advance on one side does not, unfortunately, mean simultaneous advance on others. Scientific discoveries and their industrial applications may even be in certain respects injurious to ethics, to the social order and the play of creative imagination. But if the rational impulse is that which moves to comprehensive harmonious system this cannot be the ultimate result. By following its reason, mind must in the long run grow, not in parts, like a monstrosity, but as a whole, like an organism, and on a wide review I think a deeper correspondence

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between the ethico-religious development on the one hand and the scientific and industrial on the other is revealed below the partial conflicts. But the action is mutual, not one-sided, and the fact that science has brought humanity much nearer to mastery of its own life and thrown great, if not full, light on its development, must be a factor in the account of any religion which will help the modern world. It is of no small account that it displays the growth of mind in the general processes of evolution and indicates the amplitude of its achievement. If, indeed, that development is bringing it to the verge of self-understanding and self-direction, it is clear that mind as we know it holds a position of central importance in the entire evolutionary process, a result which must affect our whole conception of reality and, therewith, our ethical and religious beliefs. Should this theory be disproved, it would still remain true that the higher growth of mind as we know it is socially conditioned, that so far as the story of its development goes at present, its greatest work has been done in co-operation, and that the task immediately before it is to make co-operation more comprehensive and more secure. Sociology takes up the story of mind where psychology leaves off, and the chapter which it adds, revealing mind as an effectual force in the world's affairs, gives a new significance to all that has gone before.

